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It is always a pleasure to welcome contributions to these columns from our newer members, no one ever need wait for an invitation to become a contributor. Since the ladies are entitled to precedence, the notes of Miss Armitage on two of the roads in the "Old Dominion State" are of more than passing interest. Even in the early days there were misunderstandings between the manufacturer and the railroad officials. In her capacity as Research Analyst of the Chesapeake & Ohio Ry. Co., may we express the hope that she will favor us with further contributions for the State of Virginia is rich in the history of Transportation.

Another new contributor is Mr. Kenneth E. Kipfer who has told us a bit about one of Kentucky's smaller roads—The Carrollton R. R. Kentucky had many such small roads, some of which have ceased operations and some are carrying on valiantly. Like Virginia, Kentucky is also rich in transportation history if one can afford the time to unearth it.

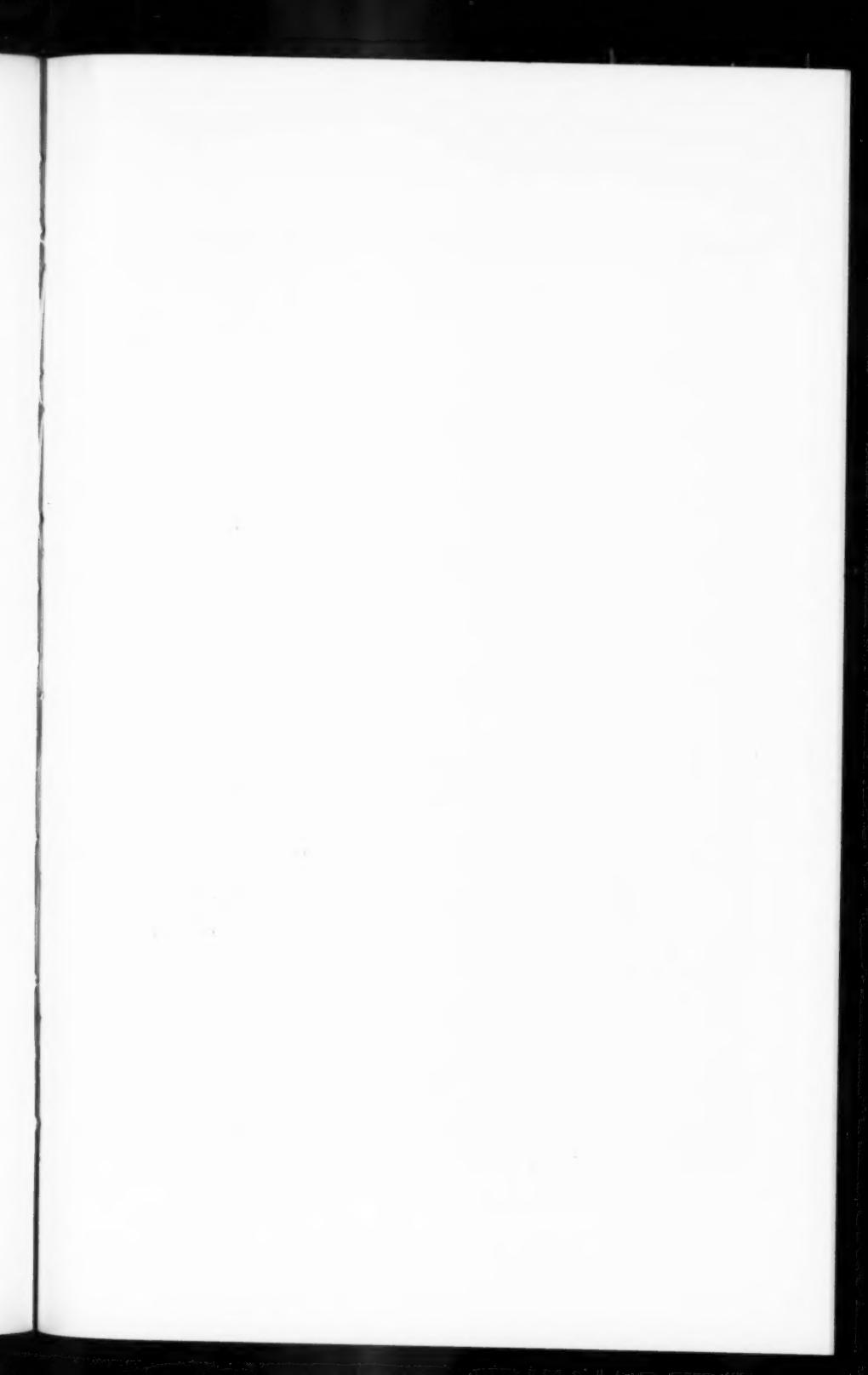
Our good friend "Doe" Yungmeyer, a couple of years ago, was allowed the privilege of taking notes from the minute books of the first

railroad that ran west of Chicago—the Galena & Chicago Union R. R. In order to avoid some repetition they have been arranged as a supplement to our Bulletin #27, in that all of the items found in this contribution are in addition to those found in the Annual Reports, upon which Bulletin #27 was based. And speaking of Chicago, how many of us were taking pictures in 1893? Your Editor was not, but the Curator of this Society, by saving his money, took himself and his camera to the World's Fair and you will find an account of his trip.

We are glad to furnish our members with another one of Mr. Poor's histories of the Colorado railroads—this one covering the Denver, Boulder & Western R. R. Here again, our members should not confuse this contribution with his history on the South Park. The paper read before our New York Chapter meeting by your Secretary, Warren Jacobs, contained so many interesting facts, that it seemed worthy of preservation in our columns for the benefit of all of our members. It is the hope of your Editor that his article on the Pennsylvania R. R., will clarify the system that road followed in the numbering of its locomotives.

Lastly, we are all indebted to our Resident Western Director, Mr. Joslyn, for his interesting and valuable contribution on Andrew Jackson Stevens. Our "Green Mountain State" has produced many famous men and Andrew Jackson Stevens is one that should be honored. In that far western state—California, he was called upon to use all of his native ingenuity and resourcefulness. That he was lacking in neither, Mr. Joslyn's contribution will easily prove. We can admire him for that but his tolerance towards those less gifted, his fairness towards all, in my mind, mark him as a far greater man. Not many men have had a memorial erected to their memory, the funds of which were raised by a subscription of his employees. Long may the name of and the monument erected to Andrew Jackson Stevens survive and in this great land that can produce so much abundance to all, let those who will read and learn, let them emulate the fairness and tolerance of this great man.

Thus, here is your consist, credit for which should go to each individual. We all like a pat on the back and if you feel these authors deserve it, they would not be human otherwise, just take your "pen in hand" and tell them so.





—Courtesy of Southern Pac. R. R.

Andrew Jackson Stevens, General Master Mechanic, Central Pacific R. R..

Andrew Jackson Stevens

By D. L. JOSLYN

In ages past, the laureled victor, returning from the field of battle, was met by cheering thousands and escorted through an arch of triumph while the loud huzzahs from the throats of the assembled multitude rent the air. A fund was soon raised, either from the public treasury or by taxation, to erect a bronze or marble statue to commemorate the valiant deeds of the brave warrior.

Then, the sensual, crime stained ruler, not to be outdone, and jealous of the popularity of the conquering hero, had his own visage carved in stone or metal and set up in the public place.

And from this beginning came the custom, in later years, of honoring some person who performed deeds of lasting good for the human race. Men of science and creative genius, began to be thus honored, but not until after they had passed away and in a good many instances it was years after their passing before the public, who had been benefited most, thought enough of the good that had been done, to think of raising funds to erect a memorial to the one who had worked for their benefit.

Then again, there are instances where a grateful people, out of sheer love and respect, have contributed funds to purchase and place in the public square, a fitting and lasting memorial of bronze or marble, to perpetuate the memory of him who during his life time had labored for their good.

Such an instance is recorded in the City of Sacramento, where the men who toil in the railroad shops; along the dusty stretches of the rails, and on the trains; men in high places in the railroad, from the humblest to the highest, voluntarily raised a sum of money to place a bronze statue on a granite base, to show the world that they appreciated and loved the man, who during his life time, had been their friend. This man, who held a position far above the average was never too busy, never too engrossed in his duties, or too occupied in the responsibilities of his high position, but what he had time to listen to and give council to the laboring class. For he had started life in the humblest position in the railroad, and by his own endeavors had risen step by step, until he had reached a position of responsibility and trust, but in climbing the ladder of success had never stepped on another man to reach his goal.

Andrew Jackson Stevens was born in the little hamlet of Barnard, Windsor County, Vermont, September 14th, 1833 of good old New England stock. And while the state of Vermont had not not been favorable to the then President of the United States, it seems logical that the parents had supported him at the election in 1832 and named their son after him a year later.

We can vision young Stevens as he grew up, watching the little brass bound, high wheeled locomotives, decorated with brass trimmings and painted in brilliant colors as they went choo, chooing along with their trains. And we can readily imagine the desire in his heart to some

day become a part of the railroad. In his dreams he sat on the right-hand side of some balloon stacked locomotive and eased the throttle out, looking back to see that he had all his train with him, blowing the whistle at the crossings and waving to the girls who shyly watched for the train each day. We can see him dreaming and watching over his locomotive like a mother over her child.

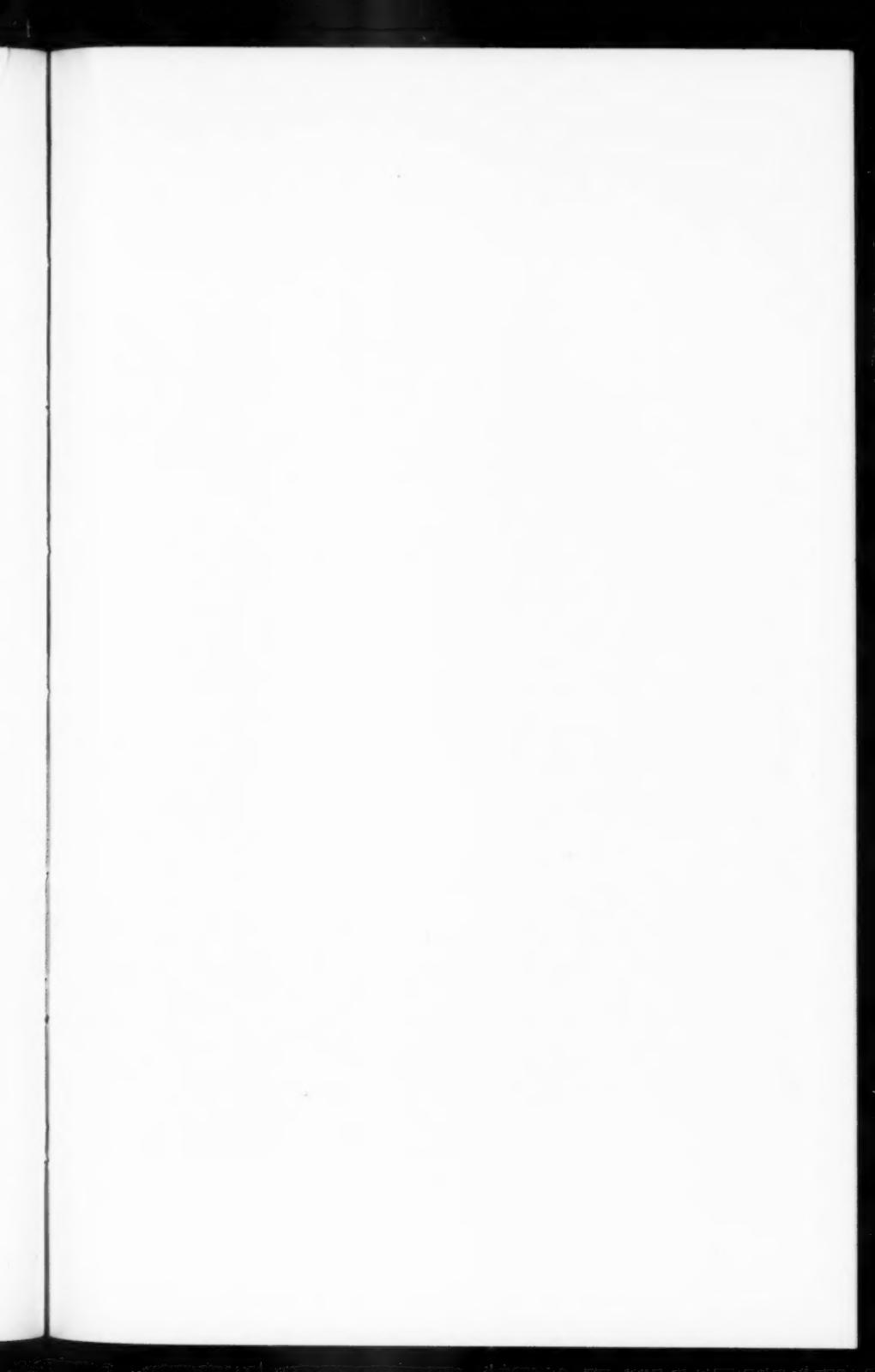
It was but natural then, that after an education in that stalwart American institution, the little red school house, that he should begin his life's dream. He entered the service of the Northern Railroad at Concord, New Hampshire, on June 1st, 1850, as a machinist apprentice, and from that day until his passing, he lived, dreamed and worked on locomotives. In the latter part of 1853, he was employed by the Vermont Central Railroad as a machinist at Northfield, Vermont, but did not long remain there, for in April 1854, he went to the shops of the Chicago, Burlington and Quincy railroad at Aurora, Illinois, as Foreman. Then in 1855, he realized his ambition of going out on the engines, for he was given a position as fireman on the CB&Q and was soon promoted to engineer and held that position until 1857 when he went to the Peoria & Oquawka Railroad (eastern extension) as engineer and remained there until 1859 when he went back to the CB&Q as engineer.

While working on the CB&Q, he met Mr. A. N. Towne who was running as a conductor on that road. Mr. Towne and Mr. Stevens became fast friends and later came to California together. Mr. Towne will be remembered as General Manager of the Central Pacific, parent organization of the Southern Pacific and continued in that position on the S. P. until his retirement.

Mr. Stevens came to California in 1861 and in August of that year was employed by the Market Street Steam Railroad in San Francisco as a machinist. He left that position in March 1862 to become Superintendent of construction of locomotives for Washington Territory at the Vulcan Iron Works in the same city. Returning to the Market Street Railroad in September 1862, he was in charge of machinery for them until March 1864, when he went to the San Francisco & Alameda Railroad, and was four months in charge of constructing locomotives and cars for that railroad. He was promoted to Superintendent of locomotives and cars for the SF&A Railroad, later holding the title of Superintendent and Master Mechanic. He was for a short time in the same capacity on the San Francisco and Oakland Railroad.

In 1869, Mr. Leland Stanford, President of the Central Pacific Railroad, parent organization of the present Southern Pacific, appointed him to Master Mechanic of that road with headquarters at Oakland. The San Francisco and Alameda Railroad and San Francisco and Oakland Railroad both having come under control of the Central Pacific about that time.

Early in 1870, Mr. Perkins, General Master Mechanic of the Central Pacific resigned to return to his home in the east and Mr. Stevens was promoted to the position which he held until the time of his passing on February 11, 1888 in Sacramento.





A. J. Stevens Monument—Thanksgiving Day 1908. The committee have read the minutes and are ready to adjourn—their work finished for the year. Left to right: Jim Ferguson, Richard Vaughan, J. G. Camp, Martin Scanlon, James P. Taylor, Thomas Warmby, W. B. Oldfield.

While working for the CB&Q, Mr. Stevens met a young school teacher residing in Kankakee, Illinois. In 1858, Miss Lydia M. Dusenbury became Mrs. A. J. Stevens in Kankakee and the young couple made their home there until coming to California in 1861. To that union was born two children, a boy and a girl. The boy, Fred A. Stevens later served his time as an apprentice machinist and later became, like his father had before him, an engineer, working for the Southern Pacific. Both children are now passed on and a son of Fred Stevens resides in San Francisco where he is practicing dentistry.

Mr. A. J. Stevens was never active in polities, although he could have been and was implored many times to run for public office, but always declined and remarked that his duty was to the railroad and that he could not do justice to both. He was active in church and its affairs and also was a member of the Masonic fraternity, holding membership in Oakland Lodge No. 188 in Oakland, California.

In Sacramento he made his home in the fine old two story white mansion that stood for years on the corner of 10th and L Streets across from the State Capitol and grounds. After his death, the household articles were auctioned off and brought more than their original cost. The site of his home is now occupied by one of the many state buildings that surround Capitol Park.

When the railroad world heard that "AJ," as he was affectionately referred to by the railroad men, had passed away, there was immediately a fund started to provide a suitable floral piece for his funeral. So fast and bountiful did the money come in that in addition to the floral piece, the men bought a large cemetery plot in Piedmont Cemetery, Oakland, where Stevens was interred, and erected a high granite shaft as a token of sincerity and presented it to the family. After this was paid for, there still remained a small amount in the fund and through the efforts of the late E. B. Hussey, the Stevens Statue Association was formed at a meeting held in the old Pavilion at 6th and M Streets in Sacramento on September 11th, 1888. Officers were elected as follows: E. B. Hussey, President; W. B. Oldfield, Vice-President; Walter Van Guelder, Recording Secretary, and J. G. Camp, Financial Secretary. This Association was formed for the purpose of raising funds and erecting a statue of Mr. Stevens in the City Plaza. Mr. Hussey appointed a finance committee and a general committee, the latter consisting of one man from each payroll department of the railroad. Subscription lists were opened to raise the necessary funds for the statue. A complete record was kept of the donors and when the funds were all in, this list was printed and a copy given to each employe. Scanning this list, I find that the smallest donation was 25 cents, the largest 150 dollars, with five dollars being the average.

The design for the statue submitted by Albert Weiner of San Francisco, was accepted and a contract let to the W. T. Garrat Company, foundry of that city to cast it. The city donated the concrete foundation and the granite work was done by Carlaw Bros. of Sacramento. The granite was brought from the quarries at Rocklin and Fresno. The standing figure of Mr. Stevens is nine feet tall, on a square

granite base twenty feet high. The figure stands in a position quite natural to the deceased and comparing the likeness with photographs, is very good. Time has aged the metal and today, 1944, the statue has taken on that beautiful color of old bronze.

Unveiling was on Thanksgiving Day, November 28th, 1889 and was preceded by a mammoth parade through town led by the Hussar brass band and participated in by nearly every organization in town, including the military and high state, county and city officials. Prominent in the parade were the three posts of the Grand Army of the Republic with their drum and bugle corps.

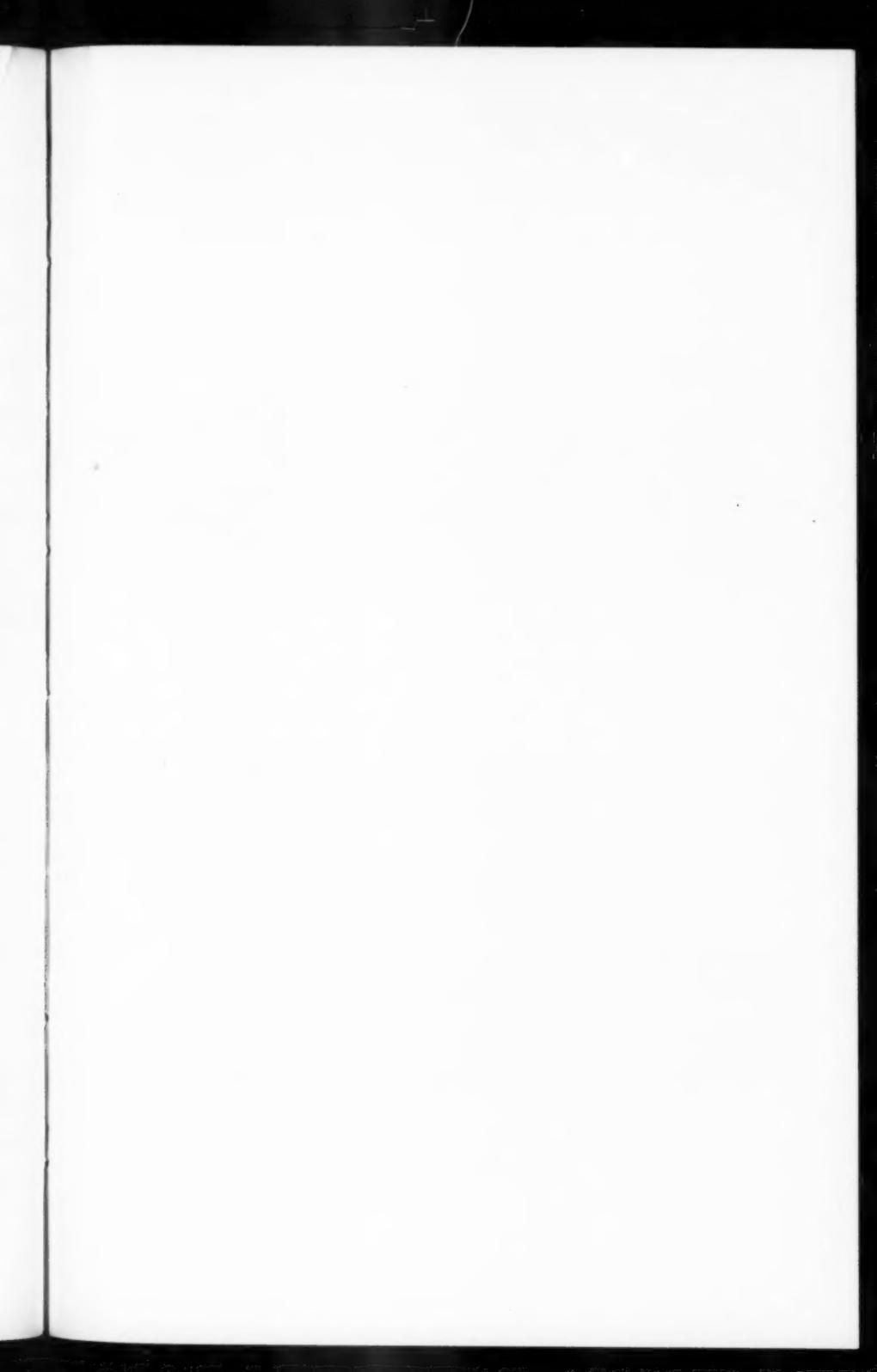
Arriving at the base of the statue, Mr. Hussey opened the exercises with a few remarks, and a double quartet rendered a song suitable to the occasion. This was followed by a prayer given by Rev. J. F. von Herrish. Thomas Warmby, Grand Marshal of the parade, recited a poem written especially for the occasion by Ralf Turner, son of one of the foremen in the shops. President Hussey then delivered his oration, and like all orations of those days was very lengthy. The Sacramento Union, a few days later, gave the entire oration, and it fills three and one-half columns of very fine type. Mr. Hussey extolled the virtues of the deceased and dwelt at length on his many charitable acts, his deeds of kindness and his fairness to the men who labored under him. Miss Julia Hooper, young daughter of the late Chas. Hooper who had been Boiler Shop Foreman under Mr. Stevens, came forward and unveiled the statue. It was then presented to the city by Mr. Hussey, on behalf of the railroad employes, that it might stand for all time to come as a fitting memorial to the man who had been "A Friend to Labor."

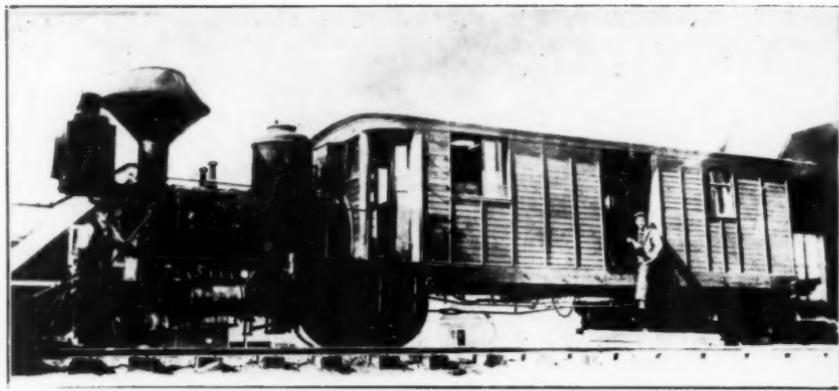
Mayor Eugene J. Gregory was then introduced and after telling of the many fine things that his late friend A. J. Stevens had done, accepted the statue on behalf of the city and promised that it would be well and faithfully taken care of as long as the city should stand.

Governor Waterman was introduced and spoke briefly and to the point, calling attention to the fact that the death of his friend Mr. Stevens was a loss, not only to the railroad, the employes of the railroad and the city, but to the state as well. After which the double quartet rendered another beautiful song written for the occasion and the ceremonies were over.

The total amount of money credited to the statue fund was \$5,292.10 and this was all accounted for in the printed statement given each subscriber. From this list we learn that the statue cost \$5,000.00, the remainder of the money going for printing, unveiling and incidental expenses and was all itemized.

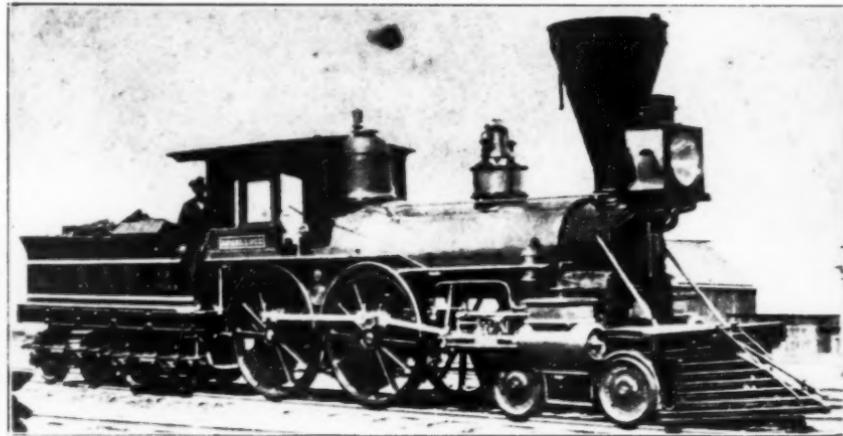
For years following the unveiling, it was the custom of the Committee to meet at the base of the statue on Thanksgiving Day, look the monument over to see that everything was all right, read the minutes of the forming of the Association, then adjourn for the year. This custom has now been done away with, as so few of the Committee are still alive, or living in Sacramento. The new generation of railroad men, with a few exceptions, knew not Stevens and his worth. The writer has formed himself into a Committee of one to keep track of the





—Collection of D. L. Joslyn.

Market St. Steam Ry. #4. Vulcan Iron Works and one of the cars that Mr. Stevens worked on while working for the Market St. Road.



—Collection of D. L. Joslyn.

One of the locomotives built at Alameda Point for the San Francisco & Alameda R. R. by A. J. Stevens.

monument, and at his request the city had the granite work cleaned this spring.

Before going any further, we would like to recite the following to show how quickly are men forgotten, even though they have done lasting good for the multitude. One noontime, recently, three of us from the shops went over to the Plaza and by standing around and gazing up at the figure, we soon attracted a crowd to see what was going on. The question was then put: "Who was A. J. Stevens and what did he do?" The answers were many and varied. Here are a few: "He was one of California's Governors who put the corporations in their place and told them to stay there." "He was a President of the A. F. of L." "He was an early Mayor of California who saw to it that labor got its share." "He was a minister of the Gospel who befriended the poor laboring man." "He was a leader among the Knights of Labor." "He was a Boss of some kind." He was this, that and the other thing. Everything but what he really was. And all these answers in view of the fact that on the face of the granite is the inscription, "Erected to a Friend of Labor by his co-workers, November 28th, 1889." Such is the short memory of mankind. With this thought in mind, the writer has taken upon himself to write this little history in order that our members, at least, may know who A. J. Stevens was and the good that he did.

Mr. Stevens is best remembered among the railroad fraternity for the valves and valve gear that he designed for locomotives. But, in digging around among the musty old records, I find that he had invented, some of which were patented and used, some were not, the following:

- Equalized Steam Brakes for Locomotives.
- Balanced Valves for Locomotives.
- Steam-operated Fire Engines for Cities.
- Rail Curving Machine, Power-operated, Portable.
- Water Works for Cities.
- Deep Well Pumps.
- Steam-operated Trackmen's Car.
- Oil Burners for River and Harbor Steamers and Ferries.
- Steam-operated Capstans for Steamers and Boats.
- Steam-operated Steering gear for Boats.
- Steam-operated Crane for Coaling Locomotives.
- Air-operated Crane for Coaling Locomotives.
- Snap Rings for Steam Engine Pistons.
- Power Reverse Gear for Locomotives.
- Radial Stay Fire Boxes for Locomotives.
- Safety Valves for Locomotives.
- Improved Switch Points for Tracks.
- Automatic Couplers for Cars.
- Improved Switch Stands for Tracks.
- Three Different Types of Valves for Locomotive Cylinders.
- Three Types of Valve Gear for Locomotives.
- Steam Bell Ringer for Locomotives.

Air Bell Ringer for Locomotives.

Brick Making Machine for Making Fire Brick for Boilers.

Water Wheel Type Cones for Smoke Stacks.

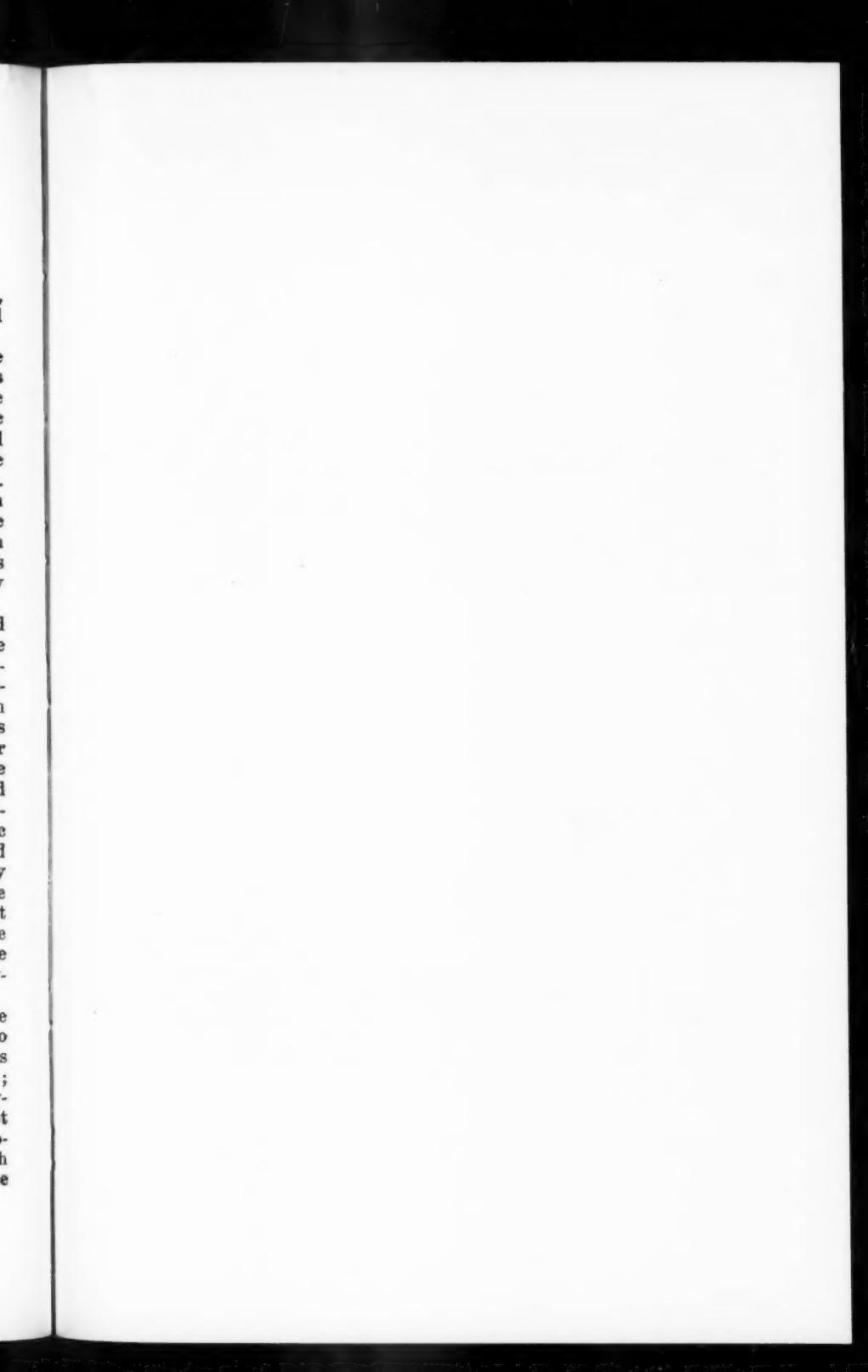
Steam-operated Transfer Tables for Shops.

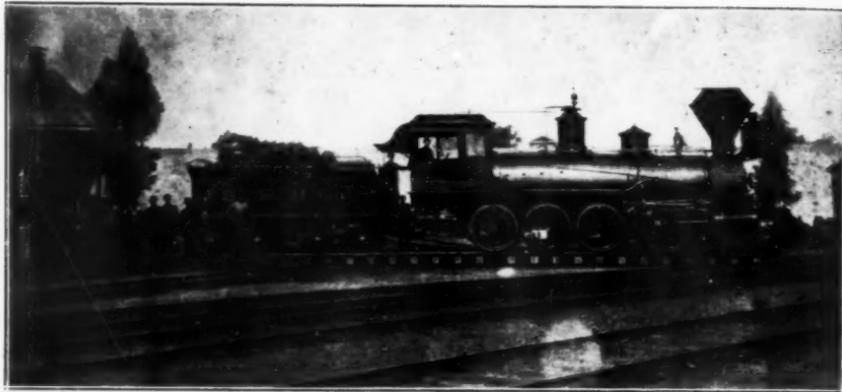
No doubt there were other inventions of his, but the lapse of time, the ruthless hand of ignorance and wanton destruction have destroyed the record of them.

Before going into the Stevens Valve Gear and Valves, it might be well to dwell briefly on what was at hand; that is, the type of valves and gear that were used on locomotives during his time. The slide valve was the universal valve in use at that time. There had been some attempts to provide a piston valve. Some were actually designed and built; but we shall not discuss that here. In this country, the slide valve was actuated by the Stephenson link gear on almost all railroads. There were a number of the older type gears still in common use on some of the older locomotives, but the Stephenson gear was the one most commonly used. Walchaert's gear was used to some extent in Europe, and a few attempts had been made to equip locomotives in this country with that type of gear, in fact, William Mason did build many locomotives at Taunton, Mass., incorporating the Walchaert gear.

In the engineering practice of the world, before the locomotive and marine engines came into use, there was no need for devices to make engines rotate in more than one direction. When the need for a reversible engine first arose, it was met with very crude appliances. Locomotives were kept at work, earning money for their owners, which were reversed by the man in charge stopping the engine and, by means of a wrench, changing the position of the eccentric by hand. Other schemes were worked out and looking over these designs, there were some fearful contraptions. How a man could remember what to do and do it right, is a miracle. One of the better forms of reversing the motion was a fixed eccentric, with the means at the end of the eccentric rod for engaging with the top or bottom of a rock shaft, which operated the valve stem. This was the form of reverse gear used on the early Baldwin engines. Until the link was applied to the valve gear, the double eccentrics—an American invention—were the most important improvement that had been made on the locomotive valve gear since the incipiency of the engine. The "V" hook in connection with the double eccentrics, made a fair reversing motion in comparison with anything that had preceded it. But it was faulty.

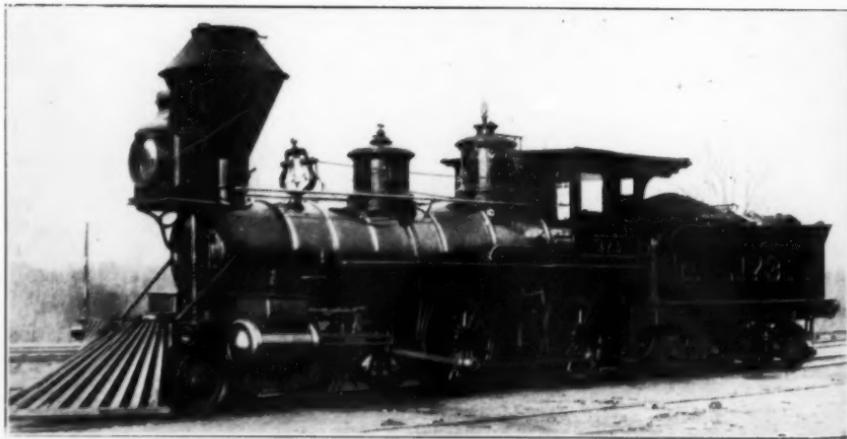
There is no doubt but the link was first applied to a steam engine by William T. James of New York, a most ingenious mechanic, who also invented the double eccentrics. James made a number of experiments from the period 1830 to 1840, with steam carriages for common roads; and it was in this connection that he invented the link. His work proving a commercial failure, the improvements on the valve gear were not recognized at that time. However, when Long started the Norris Locomotive works in Philadelphia, he brought out some locomotives with double eccentrics and was indebted to James for the idea of a separate eccentric for each direction of engine movement.





—Collection of D. L. Joslyn.

S. P. #69. Cooke-built with Stevens features—power reverse, combustion chamber, steam brakes, steam ports at end of cylinder for direct steam admission, tulip steam chest oiler, balanced throttle valve, stack with water wheel cone.



—Collection of D. L. Joslyn.

C. P. #173. First locomotive built at Sacramento Shops by A. J. Stevens—combining same features as C. P. 55. Same picture taken after air brakes applied and injector replaced Stevens Cross head pump.

The credit for inventing the ordinary shifting link is due to William Howe of Newcastle, England. This inventor was a pattern maker in the works of Robert Stephenson & Co. He invented the link in 1842 in practically its present form.

Egide Walchaert, a Belgian mechanic, brought out the first of the valve gears bearing his name and patented it November 30th, 1844, just 100 years ago. He improved upon it from time to time and others worked at it, including the late William Mason. The principle remained the same, there being a few minor changes, such as substituting the return crank for the eccentric as first designed. The Walchaert valve gear did not find much favor in this country until after the turn of the last century. Mr. Stevens was familiar with it, but decided that he could do a little better with something of his own.

As was stated before, the slide valve was the universal valve in use during Stevens' time and the Stephenson link gear was the most popular and almost universally used gear. The Stephenson gear had some faults, the principal one being it let the steam escape early when running hooked up; also the closing of the exhaust port early, leading to excessive compression. When steam pressures were low, and the speed of trains was slow, the gear worked with satisfactory results. But, as pressures were increased and speed of trains was stepped up, the defects mentioned became more troublesome.

The first type of gear for locomotives as worked out by Mr. Stevens was applied to the 229 which was built at Sacramento in 1882. On this engine, he first applied his own design of valves, one for each end of cylinder. This made necessary a somewhat longer steam chest than an ordinary cylinder would require. As may be seen from the sketch which I have prepared especially for this article, there were two sets of valves, one upper and one set lower. The upper valves were used for working the cut off and the lower or main valves worked full stroke, there being no means provided for shortening their travel. As may be seen, the main valves worked from the common link gear with double eccentrics. The upper, or cut off valves were actuated by a single eccentric set at proper angle to give both forward and backward motion. For reversing the cut off valves, a curved rocker arm was used, on which moved a sliding block. Attached to the sliding block, was the valve stem and suspended from the block was the end of the tumbling shaft. Moving the block up or down, would reverse the direction of travel of the valve. The main valves were heavy and with the added weight of the cut off valves and pressure of boiler steam in the chest, it became quite a task for the engineer to reverse his engine.

To overcome this obstacle, a power reverse gear was designed and applied and is plainly shown in the sketch. Briefly, this consisted of a small cylinder studded to the main frame, whose piston was attached to a cross head and from the cross head a lever was pinned to the reverse lever, near the point where the reach rod was attached. On the reverse lever, in the cab, was a small round rod that extended downward to a four way cock and was keyed to it. Attached to the cock

were suitable pipes leading to each end of the small cylinder, to the back head of boiler and to the atmosphere. On the top of the rod was a lever projecting out from the reverse lever. Ordinarily, this lever was in position so that four way cock was open to the atmosphere from each end of the cylinder and closed to the boiler pressure. In reversing his valves, the engineer would unlatch his lever in cab, and by moving the small lever forward or back, would admit hot water at boiler pressure to the small cylinder, and when sufficient movement of the valves was attained, the lever was turned again to neutral position. The engineer had to use caution in opening the pressure to the four way cock, as too quick or too wide an opening would result in his being thrown back against the cab, or out the front window. They soon learned how to use the reverse gear and the power reverse. Later a choke was applied in the line from the boiler and the movement was slower and less hazardous.

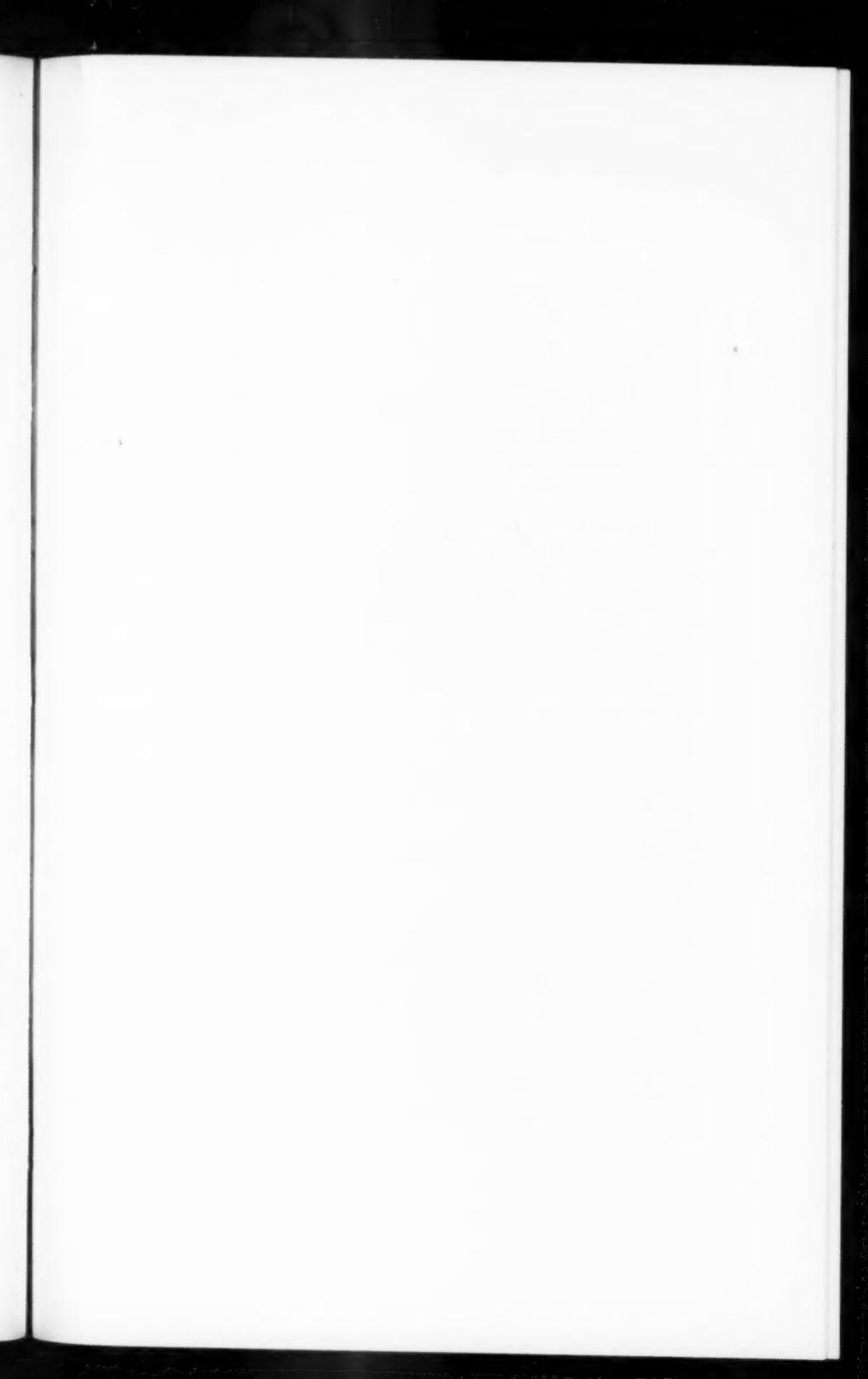
The 229 had a number of Stevens' ideas incorporated on it. They were the double valves, the valves with supplementary passages, power reverse, equalized steam brakes, combustion chamber in fire box, water wheel type cones in smoke stack and cab with clerestory roof and lowered canopy for protection of fireman.

The locomotive, in trials on the steep grades of the Sierra Nevada Mountains, proving a success, 20 more engines like it were ordered from the Cooke works and their only difference being in the cylinders which were increased from 19"x30" to 20"x30". There were 4 pair of 57-inch drivers, the 2nd and 3rd pair having blind tires.

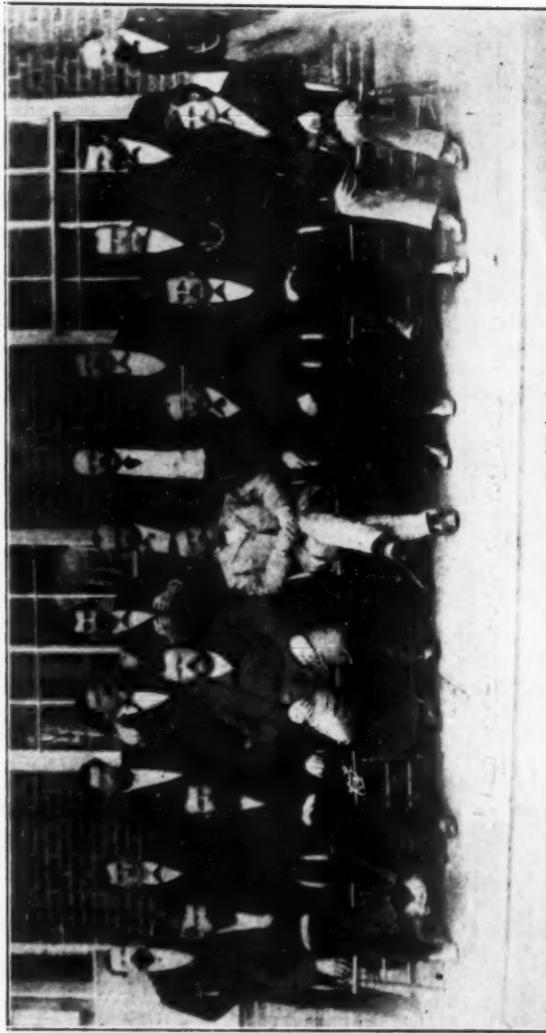
The double valves on these engines were in use for a number of years, or until after Mr. Stevens' death, when some of them were removed and single valves applied, but until they were scrapped or entirely rebuilt, retained the long steam chest with a separate valve for each end of cylinder, the first change of any kind being the removal of the cut off valves, and the working of the regular valves by the conventional Stephenson link motion. In one or two instances the A. J. Stevens valve gear and valves were applied, and this was done on the Cooke built locomotives Nos. 51, 53, 55, 56 and 58. (See "Locomotives of Southern Pacific" by G. M. Best for later numbers and disposition of these locomotives.)

The first locomotive to have the upper and lower valves removed and single valves with Stephenson gear applied was the SP 68. This was done in the year 1888, shortly after Stevens' death. There is a record dated in the same year of application of Stevens valve gear to the 1950, formerly 229, but there is no further evidence of this having been done. Our recollection of the #229 when it was numbered 2800, was that it had Stephenson link gear, with the Stevens valves.

In 1898, the Cooke Locomotives 2827, 2829, 2830 and 2831 were completely rebuilt with new boilers, altered frames, new cylinders and Stephenson link gear. The first of these rebuilt was the 2831, formerly SP 78, later the 2826 formerly SP 52 was rebuilt as above, and these locomotives still appear in the locomotive roster as being in service but now numbered in the 2900 series. (See Mr. Best's book.)



—Courtesy of Southern Pacific Co.



A. J. Stevens, center front row, and the foremen at Sacramento Shops, 1876. Back row, L. to R.: L. J. L. Gorish and Pet. Sheedy, both Erecting Shop Foremen; F. La Shells, Forge Shop Foreman; Jay Harris, Machine Shop Foreman; George Welch and Jabez Turner, both Cabs and Pilots, Tender Frames and Woodwork Foremen; M. A. Baxter, Foundry Foreman; Chas. Hooper, Boiler Foreman; Geo. Chase, Sheet Metal Work Foreman; M. W. Cooley, Brass Foundry Foreman; Seated, L. to R.: J. W. Clark, Roundhouse Foreman; S. Uren, Blacksmith Shop Foreman; Geo. Alien, Tender Repair Foreman; A. J. Stevens, Gen. Master Mechanic; W. H. Milliken, M. M., Sacramento Shop Div.; Chas. Shields, Asst. Boiler Shop Foreman and R. A. Fisher, Purchasing Agent.

The idea of the upper and lower valves was not entirely original with Mr. Stevens, and he never claimed it was. Upper and lower valves, of an entirely different type was first patented by A. M. Eastwick, July 21st, 1835, and applied to a locomotive built for the Baltimore and Ohio Railroad. But the idea of the upper cut off valve, the supplementary ports, the method of sliding block and reversing were all original with Mr. Stevens.

While the 229 was being built, Mr. Stevens was working on another locomotive and a type of valve gear that he had worked on for a long time. This locomotive was finally built and was the famous 237, "El Gobenador." The valve gear on this engine was developed from the Walchaert gear, but differed from it in most respects. As may be seen from the diagram, there were two valves, one for each end of cylinder. Mr. Stevens in describing the gearing on this engine said, "My valves closely resemble the Allen valve, but differ from it. In operating, steam is admitted to and exhausted from, the cylinder through the same passage. This arrangement provides double area of admission and double area for exhaust steam, an important consideration, especially with high piston speed."

As may be seen by the sketch, the valves are actuated by two motions. One taken from a single eccentric, the other derived from a connection with the cross head. The single eccentric, as on the 229, was used to give both forward and backward motion, and was set at the proper angle to the crank to produce motion in either direction. For reversing, the 237 like the 229, was provided with the curved rocker arm, and sliding block. Attached to the sliding block is the link which connects with the lap and lead lever. The lower end of the lap and lead lever was attached to the cross head by a link and received an oscillating motion from it. The lap and lead lever was suspended from the boiler by a suitable hanger. Projecting from the lap and lead lever are two pins, to which are attached the valve stem rods. These pins are set upon the lever at points between 90 and 180 degrees apart, so as to give a differential movement to the valve, which cannot be obtained when the pins are set opposite on the lever.

Each valve has its own rod, and separate connection with the lever. The valve rods worked side by side making necessary two stuffing boxes on the steam chest. The rod nearest the boiler was connected to the front valve, that on the outside to the back valve.

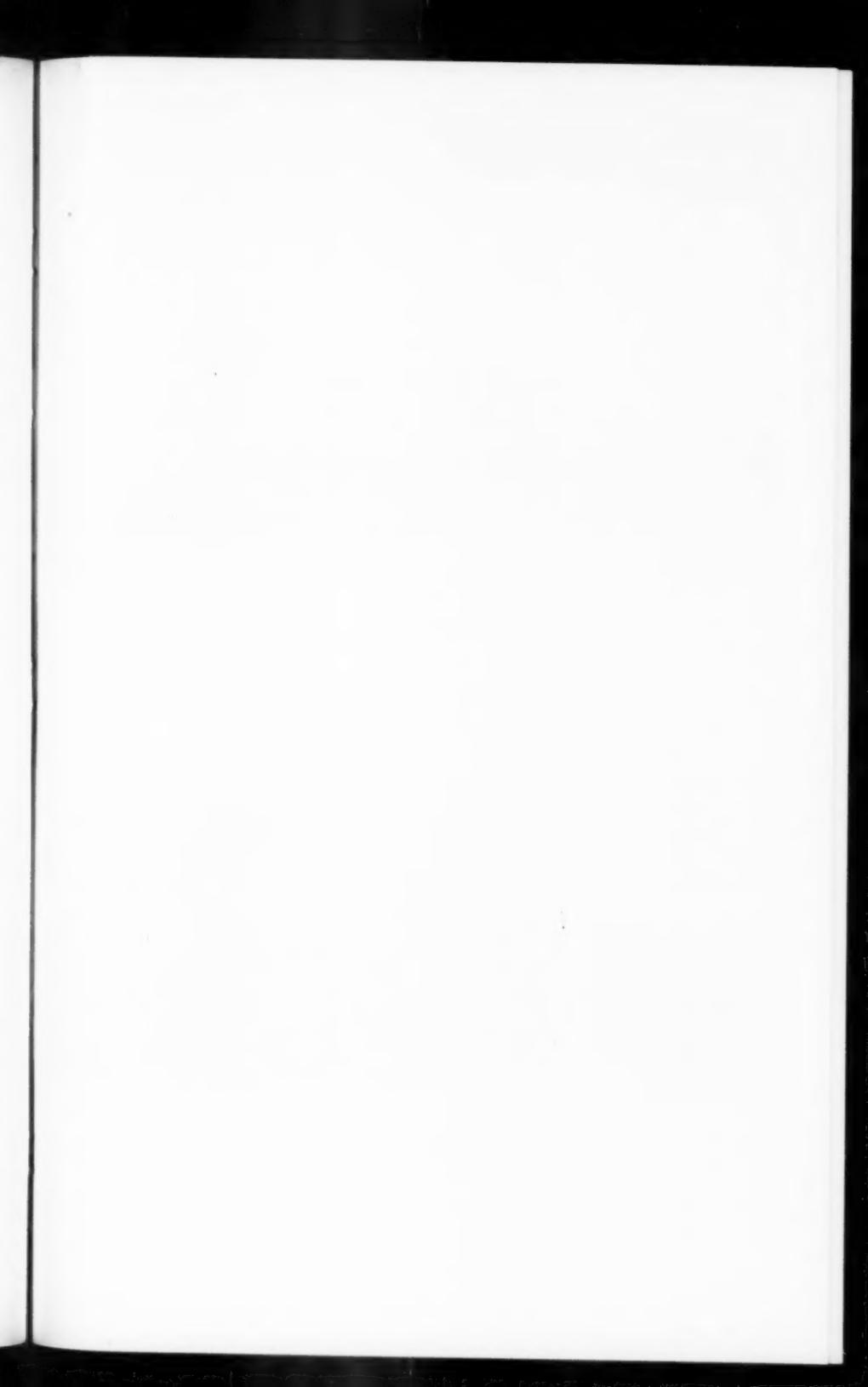
Later, the front valve rod was passed through the back valve rod making necessary but one stuffing box upon the steam chest. This was the final Stevens arrangement of rods in his gearing. In the later gears as fitted to the locomotives built at Sacramento, having the A. J. Stevens valve gear, the suspension of the lap and lead lever was from the frame in place of hanging it on the boiler and this is shown in the drawing of the valve gear as applied to ten wheel engines built at Sacramento.

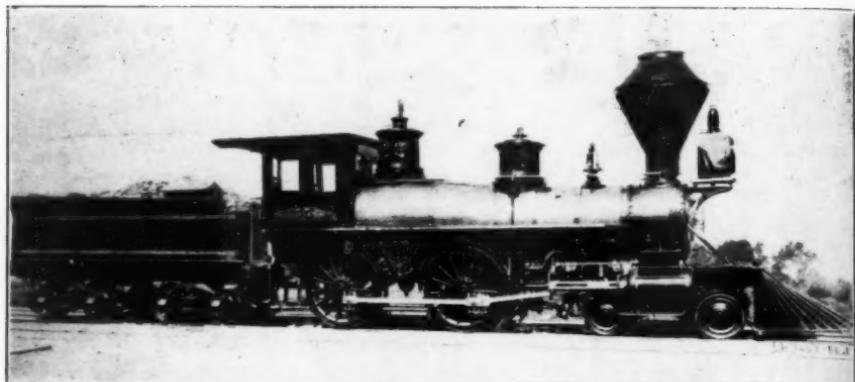
The movement of the valve is governed as follows: The valve being coupled up by independent rods to the lap and lead lever, they will

move together, and in the same general direction, from the action of the eccentric rod, either from the single eccentric or as later applied from the return crank on the crank pin. But besides this movement, common to both, each valve is controlled and acted on by the angular position of the two pins, which results from the rotary or oscillating movement of the lap and lead lever upon its center; and each valve, instead of having a uniform rate of travel has a variable movement. The degree of this variable movement is governed, both by the distance of the pins from the center upon which the lever works and the length of the lever, and can be increased or diminished by changing the position of one or the length of the other in construction. The horizontal movement of the valve received from the lap and lead lever while the same is in mid-travel, is very slight, while the piston and cross head are traveling very rapidly. By this slow movement of the valve, steam is retained in the cylinder until the piston has nearly completed its stroke; and, on the other hand, the exhaust is kept open. As the cross head approaches either end of the stroke, the action of the valves is very much accelerated, receiving, as they do, their motion from the combined action of the lap and lead lever and the return crank or eccentric.

The exhaust lead is controlled by the pin in the lap and lead lever, which is on the center or horizontal, when the cross head is at either end of the cylinder. The steam lead is controlled by the pin that is vertical, or above the center of the lap and lead lever, when the cross head is at either end of the stroke. Both steam and exhaust lead are uniform at all points of cutoff. By this arrangement of the valve gear and valves, steam can be cut off at any point of the stroke, and is retained, if desired, to the last inch of the stroke. In receiving, the steam is evenly distributed at all points of cutoff.

The diagram of the 237 shows the last type of valves applied to this engine. The first valves were rotary and under trial, the results obtained did not suit Mr. Stevens, so he applied a valve as he said "With double admission and double exhaust." These valves were left on the engine for several years, and were then removed and valves applied as shown in diagram, and provide single admission and double exhaust. This resulted in obtaining what Mr. Stevens had long striven to achieve, and that is, steam was retained in the cylinder, using its expansive power, until the piston neared the end of the stroke, then opened quickly and allowed the exhaust steam to escape, but the valve on its return closed the exhaust quickly allowing a small amount of steam to be retained in the cylinder for compression, acting as a cushion as the heavy reciprocating parts passed over the center and just a fraction of time before the piston started on its travel in the opposite direction, the valve began to admit steam, thus acting as a cushion. When properly set, the valves of the Stevens gear were very efficient and the engine was snappy. But, as in a number of cases, persons who did not understand the principle of the Stevens gear and valves, attempted to set the valves, they made a good mess of it; the engine would be lame, would lack pep and power. It is possible this had something to do with





—Collection of D. L. Joslyn.

C. P. #55, built at Sacramento Shops in 1873. Deep narrow fire box, mud drum to separate sand and silt from feed water, hydrostatic lubricator, oval balanced valves and lead in rim of wheel for counter balance.



—Collection of D. L. Joslyn.

S. P. #213—typical Stevens ten wheeler. Balanced oval valves, valve gear, sand box under boiler belly, balanced throttle valve and connecting rod without keys.

the abolishment of the Stevens gear on his death, and in this connection, we are convinced that the General Master Mechanic who succeeded Mr. Stevens, was not much in favor with the gear and valve. He was partial to the Stephenson link gear and, indeed, the Allen balanced valve. No effort was made to teach the mechanics at outside points in the proper method of setting and maintaining the Stevens valves and gear. Those engines equipped with his gear were retained in service, but unless the valves were set by mechanics at Sacramento or by men who understood the valves and gear, they gave but poor service. Finally, the two valves were joined by one single rod thus doing away with the variable movement of the valves. Then trouble did start and kept up until it was found that the curved rocker arm had to be changed somewhat in its radius. Still it gave trouble and the engines all becoming old and worn out were scrapped or sold. The last one was scrapped at Sacramento, the 1421, original SP 266, broken up April 24, 1926. There are still one or two of them retained around the state in contractor's service, but just how they have the valves set is not known.

The CP 237, when built and placed in operation, was the world's largest locomotive and attracted a great deal of attention from the mechanical world. In comparison with our modern locomotives, it would be considered puny. But at the time it was built when the 4-4-0 or American type engine was used extensively by the railroads, and very few moguls, ten wheelers or eight wheelers came anywhere near it in weight, it was a big locomotive. In working order this engine weighed 146,000 lbs., 18,000 lbs. being on the truck, the other 128,000 lbs. being on drivers. The boiler had grate area of 29.75 square feet, there was a heating surface of 148.5 square feet in the fire box and 1690.7 square feet of heating surface on the tubes. The steam pressure was 140 lbs. per square inch. As may be noted from the drawing of the boiler, there was a combustion chamber forward of the fire box and having had experience with locomotive working water with the steam dome applied too far back on the boiler, the dome of this engine was placed further forward and made quite high to avoid working water when the engine was ascending the steep grades of the mountains. Two safety valves were applied to the dome; one being of the old spring balance type, the other being Mr. Stevens' $2\frac{1}{2}$ " spring enclosed safety valve, not a great deal different than the modern pop valve. In fact that was the name he gave his safety valve.

A balanced throttle valve of his own design was applied and each steam chest was fitted with two of his "Tulip," hydrostatic lubricators. The steam ports in the cylinders were close to each end, allowing the steam to pass directly to the cylinder and not having to take a round about way in and out, such as happened on those engines with one valve. The present piston valves are on this order. The exhaust ports in the cylinders were quite large, and the method of getting the steam out of the cylinder through the valve and over the top of the bore, resulted in a quick exhaust to the atmosphere.

The steam brakes were operated with a valve in cab which was another of Mr. Stevens' designs and had a slide valve with ports sim-

ilar to the steam chest valves. The driving wheel base of the engine was 19 feet, but the rigid wheel base was only 14' 7" as the last pair of drivers were fitted with a lateral motion and the end of the side rods attached to the rear pair of drivers had a ball joint bearing that allowed for taking curves without binding. The 2nd and 3rd pair of drivers had blind tires. The frame was in two sections. The front truck and first two pair of drivers had one section, the last three pair of drivers had the other section. Shoes and wedges were of standard Stevens design such as were applied to all Central Pacific locomotives. The smoke stack was equipped with a water wheel cone and this type of cone kept sparks from being thrown out of stack. With coal as fuel, there was not the danger from sparks as when wood was used as fuel, but there were some sparks nevertheless, which the water wheel type cone kept in the stack. All in all, the 237 compared favorably with our modern locomotives as far as some features went. Its great fault lay in not having sufficient weight on drivers, cylinders were too long and too large for the boiler. But I have no doubt that had Mr. Stevens lived he would have overcome all objectionable features and produced a locomotive that would have been far ahead of any thing then on rails, and we will have to admit that the 237 was away ahead of the locomotives of that period.

We will now discuss briefly some of the inventions that Mr. Stevens designed and built in his time. Early in the 70's he designed and applied a shield and valve balance for steam chest valves. First of this type was placed on the old No. 6 built by William Mason. New cylinders were made for this locomotive in 1870 and oval balance plates were placed in the steam chest, later a balance plate with a valve shield was put in and other locomotives were thus equipped. A valve shield of this type with the balance plate is shown in the sketch which the writer made especially for this article.

A great deal of trouble was experienced with the old tallow oilers on the steam chest; valves would get dry and stick, and he worked on a lubricator until he produced one that would feed oil to the steam chests, but of course it was not a sight feed and some oil was wasted by feeding too much. But it did save sticky valves and did supply a good way of lubricating, much better than the old tallow. A sketch of this exists which the writer prepared from the original pencil sketch as made in 1873.

During the 70's he designed and built what he termed a "Steam-operated Hand Car." It was really a fore-runner of the modern speeder. This consisted of a small car on four wheels. On the deck of the car was mounted a small boiler with water tubes that generated steam quickly from a small amount of coal. There were two cylinders mounted on opposite sides of the boiler, driving on a common shaft, and the engine was equipped with reverse gear. Suitable gearing was interposed between the engine shaft and the axles of the road wheels. This steam hand car was in use for several years and was only discarded because it was a little too heavy to be lifted off the rails and had to always be run in on a siding to let a train go by. But it did work and was used for several years.

Shortly after coming to the Central Pacific as General Master Mechanic, Mr. Stevens began to give some thought to burning coal on the locomotives in place of wood. This was finally worked out and the Western Pacific locomotive "I" was fitted with coal grates and brick arch. The bonnet stack was left on the engine and it presented an appearance that created some comment, but it worked and later when this engine was sent over on the east end to work passenger trains on the CP out of Ogden to Terrace, coal was the fuel used and engineer John Bonner and fireman Patrick Shehee agreed that it steamed well and no trouble was experienced. The picture of the CP 25 taken at Terrace roundhouse in 1870, after the CP number was added and the name changed from Western Pacific to Central Pacific, shows the engine with coal on the tender, but still with bonnet stack. Later, other locomotives, especially in the valley, were equipped to burn coal, but the diamond stack was left on the engines, and were still in use on some coal burners as late as the 90's.

While watching a fire consume a warehouse in San Francisco in the 70's, while the firemen worked frantically with their hand pumbers, Mr. Stevens started in to work out a fire engine that would operate by steam. He designed a fire engine and had it built at Sacramento. This was in use for a number of years and was so efficient that orders were received for others like it. Several were built, but the practice was soon discontinued. His work was locomotives and railroading, and while his steam fire engine was far superior to the handpumpers of the period, he left the development of fire engines to others after he proved that it could be done.

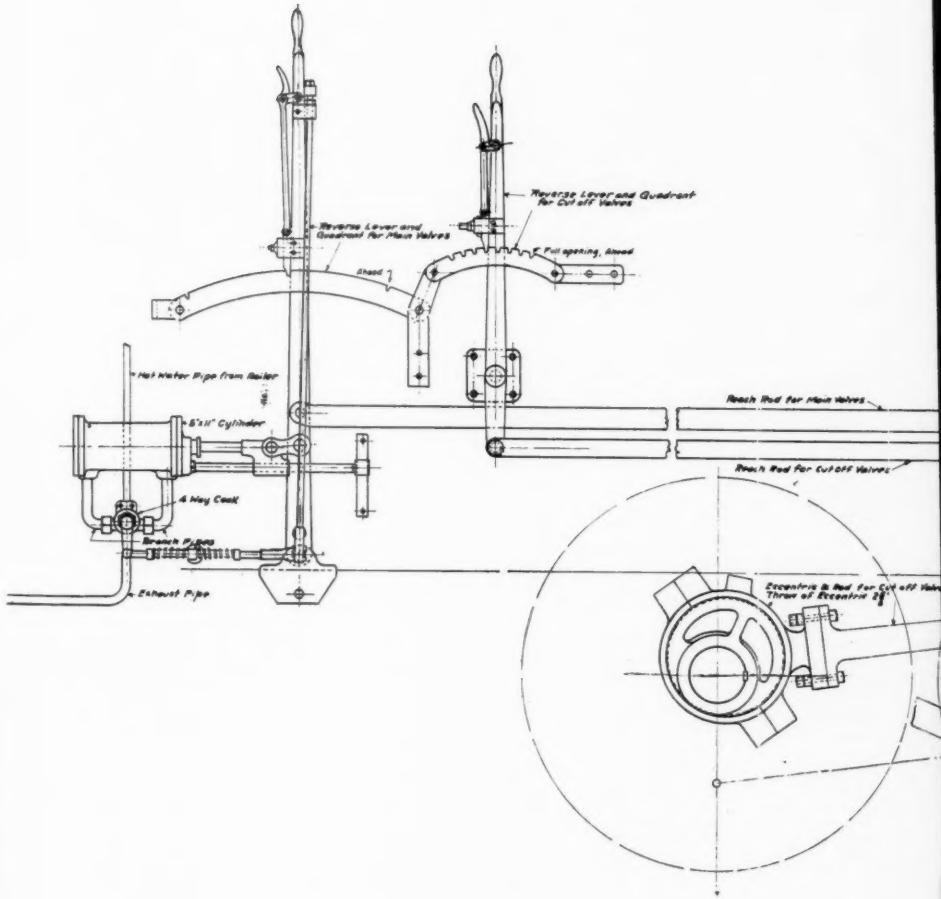
New locomotives being required by the CP, Mr. Stevens, through the help of his friend A. N. Towne, secured permission from the management to build these at Sacramento. Design was started in 1871 and the first engine turned out in 1872; it contained a number of his own ideas and briefly they were: Side rods made from one forging without keys or bolts, a stack with a water wheel cone that could be adapted to burn wood or coal, a $2\frac{1}{4}$ " pop safety valve, oval balance valves, the first of his hydrostatic lubricators, drive wheels without counter weights, lead being poured in a hollow part of the rim at the proper place to secure the counterbalance necessary, a new design of cross head pump, hydraulic brakes which were later displaced by air brakes and a new design of rings on the piston head. Later this type of ring was changed for his snap rings. A picture of this engine, the CP 173 taken after air brakes were applied in place of the hydraulic brakes is shown herewith. Mr. Stevens called his brakes, "Steam Brakes," but as they used water from the boiler at boiler pressure, they were really hydraulic.

Later engines on this same order of 10 engines were altered somewhat, and another feature was added. This being a drum into which the feedwater fed before going into the boiler. In this drum, which was secured to the boiler belly just back of the cylinders, were a number of baffles, and the feedwater entering the drum and passing through the baffles, separated the mud and silt from the water. Mr. Stevens referred to this drum as his "Mud Drum."

Business was increasing on the Central Pacific and consideration was given to finding a shorter route to the bay than by way of Stockton, Tracy and Livermore pass. There were heavy grades encountered for a short distance on the Livermore pass and tended to slow up the trains. Some trains were going via Tracy through Martinez, but that was a long way round. Trains were being operated from Sacramento over the old California Pacific railroad to Suisun and thence to Vallejo whence transfer of freight and passengers was made to the steamer New World and thence to San Francisco by this boat. It was to secure a better way, a shorter route to San Francisco that bothered the officials of the Central Pacific.

Consideration was given to building a bridge across Carquinez straits, and some soundings were made with this thought in mind and no doubt a bridge would have been built, but for the fact that while the officials were debating what sort of bridge to build, Mr. Stevens was called in to help decide. He being a mechanical man, pointed out the advantages of a ferry boat, one sufficiently large that trains could be run right onto its decks and be ferried across the narrow straits. His remarks started a battle royal, and he was told bluntly that he was consulted as to type of bridge and not whether a bridge or boat was to be built. Mr. Stanford, president of the CP, after hearing Stevens point out that the cost of a boat would be but a fraction of the cost of a bridge, that it could be built and placed in operation in much less time and that the upkeep of the boat would be less than that of a bridge, he finally won his point, with the assistance of Mr. Stanford.

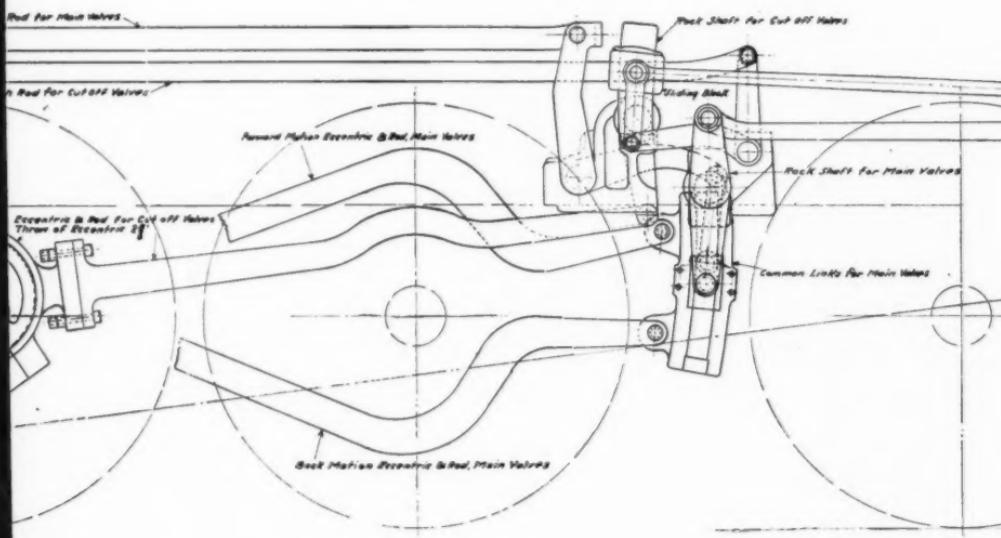
The ferry boat was designed, work on the plans starting in the drawing room at Sacramento, under the direction of Mr. Stevens with the help of George Stoddard during the year 1876. The boat was built at Benicia, but the boilers, machinery and heavy iron work was made in the Sacramento Shops. The boat was 424 feet long, had no keel, and the bottom was 406 feet long. It was operated by two working beam condensing engines, each engine turning one paddle wheel on the sides of the boat. Engines were placed fore and aft and the cylinders were vertical of 60 inch bore and 11 foot stroke. One wheel was placed 8 feet forward, and the other 8 feet abaft the center of the boat. As each engine operated independent of the other, steering the boat across the strong current of the straits was much easier than if both engines had been connected to a common shaft. Boilers were placed on the sides of the boat to allow for four tracks on the deck, small space between tracks housed the engines. Four rudders were placed at each end of boat, as it did not turn round but operated back and forth between Benicia and Port Costa. The four rudders were connected together with coupling rods and a hydraulic steering gearing which responded quickly to the Pilot's touch, was operated by an independent steam engine and pump. The capstans were also steam-operated, and both the hydraulic steering gear and steam-operated capstans were Stevens' inventions, both of which he soon had on the bay ferries and river steamers. Trains ran onto the boat, locomotive and all, and the average



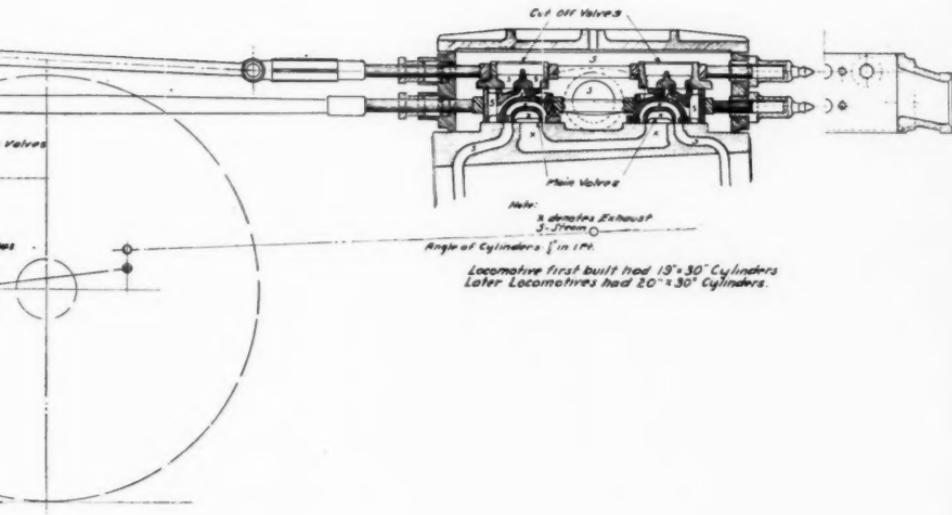
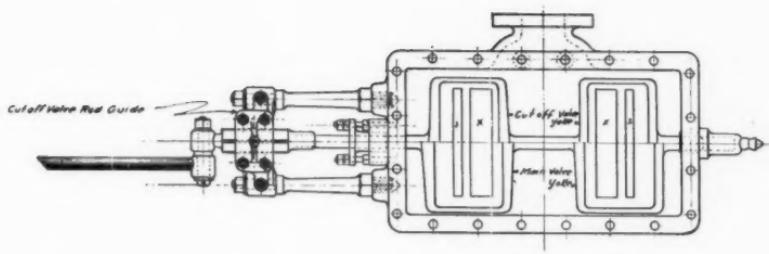
A.

A. J. STEVENS VALVE GEAR
APPLIED TO 12 WHEEL LOCOMOTIVES
1882 & 1883

DRAWING PREPARED BY D. L. JOSLYN, NOV. 9, 1943.

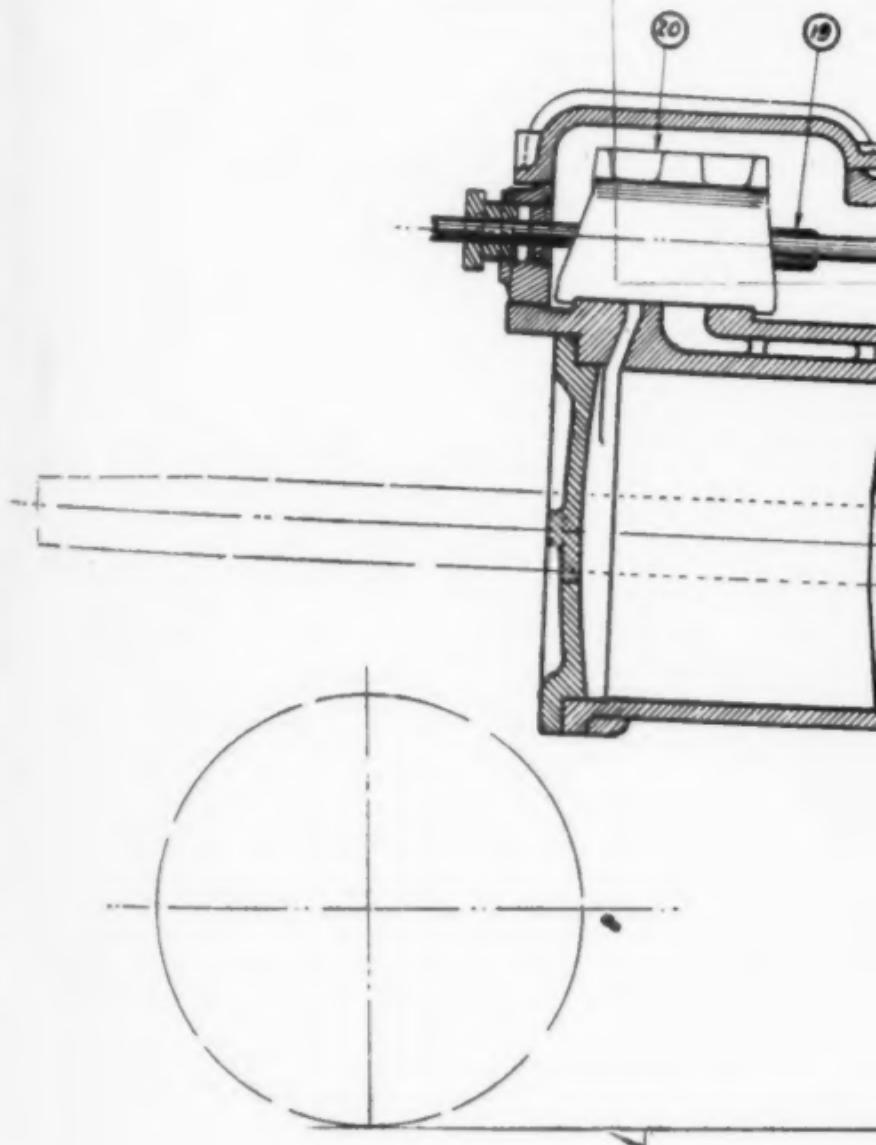


A. J. Stevens Valve Gear applied to 10 and 12 wheel locomotives 1882 and 1883.



DESCRIPTION

1	LAP & LEAD GOVERNOR	12
2	FRONT VALVE CONNECTION	13
3	BACK VALVE CONNECTION	14
4	RADIUS ROD	15
5	SUSPENSION FROM BOILER	16
6	TUMBLING SHAFT	17
7	LAP & LEAD GOVERNOR GUIDE	18
8	VALVE ROD CROSSHEAD GUIDE	19
9	VALVE ROD CROSSHEAD	20
10	CURVED ROCKER	21
11	SLIDING BLOCK	22



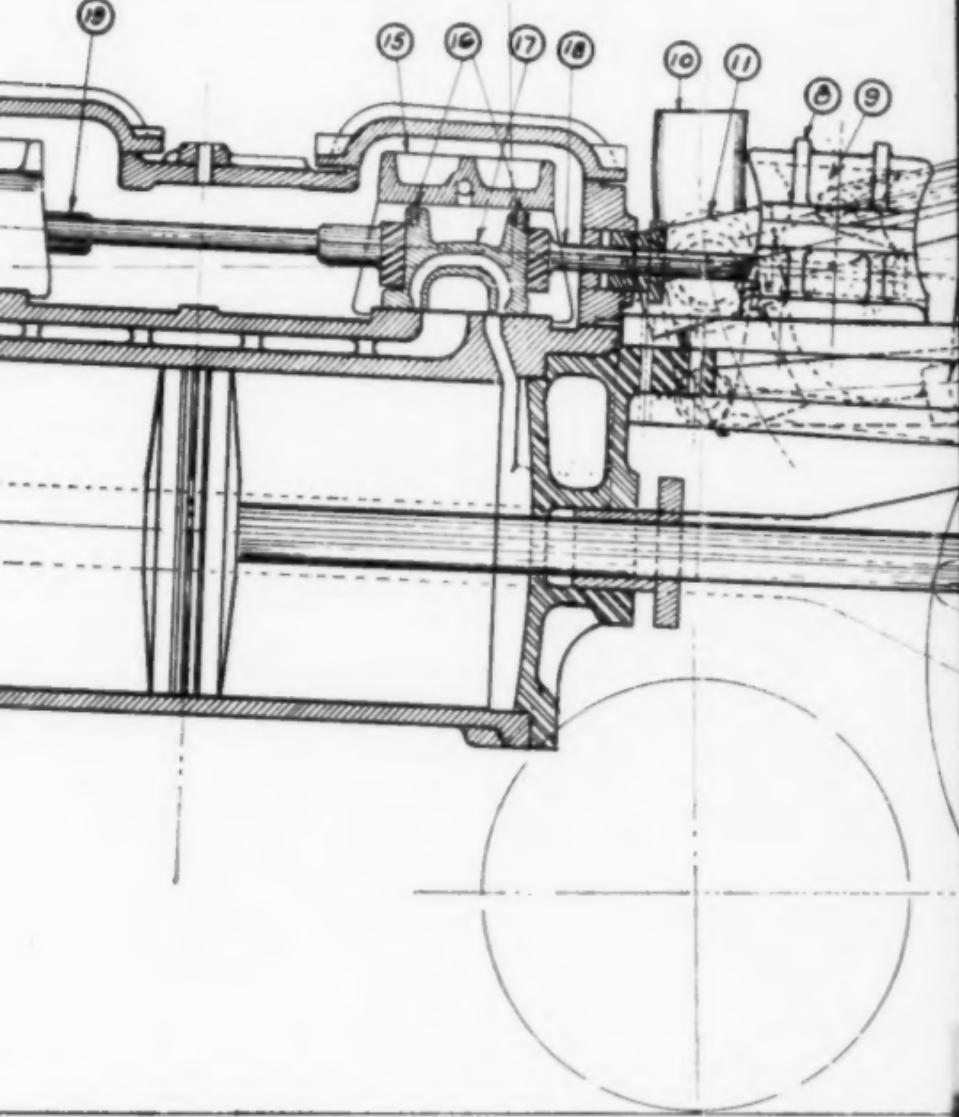
A. J. STEVEN'S VALVE GEAR
AS APPLIED TO 4-10-0 LOCOMOTIVE C.P. 237, 1887
WITH VALVES AS MODIFIED IN 1887
DRAWING PREPARED FROM ORIGINAL SKETCHES MARCH 1887
 Drawn Prepared by C. A. Stevens

DESCRIPTION OF PARTS

NOR	12 CONNECTION, CROSSHEAD to L & L GOVERNOR
CTION	13 ECCENTRIC & ROD
CTION	14 REACH ROD
BOILER	15 BACK VALVE SHIELD & BALANCE
DR GUIDE	16 BALANCE RINGS & SPRINGS
AD GUIDE	17 BACK VALVE
HEAD	18 BACK VALVE ROD & YOKE
HEAD	19 FRONT VALVE ROD & YOKE
	20 FRONT SHIELD & BALANCE
	21 MAIN ROD

DATA

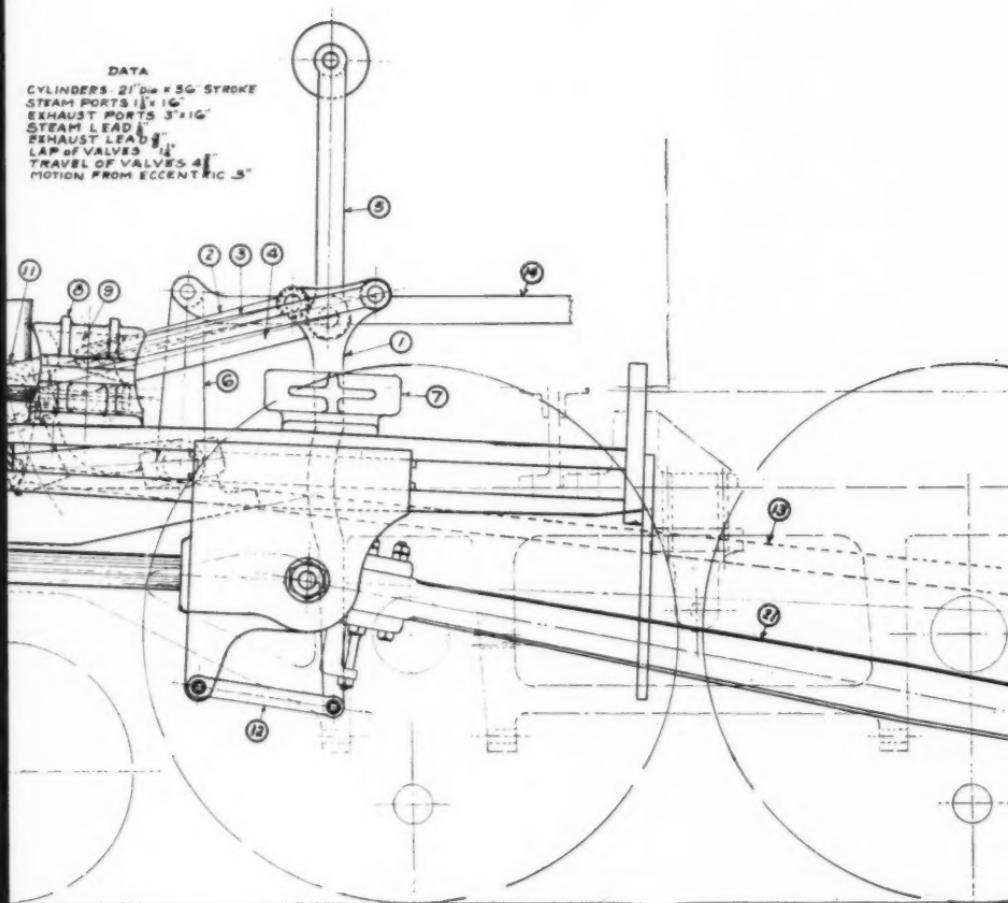
CYLINDERS - 21" dia.
 STEAM PORTS 1 1/8"
 EXHAUST PORTS 1 1/8"
 STEAM LEAD 1 1/8"
 EXHAUST LEAD 1 1/8"
 LAP of VALVES 1 1/8"
 TRAVEL OF VALVE 1 1/8"
 MOTION FROM EC 1 1/8"



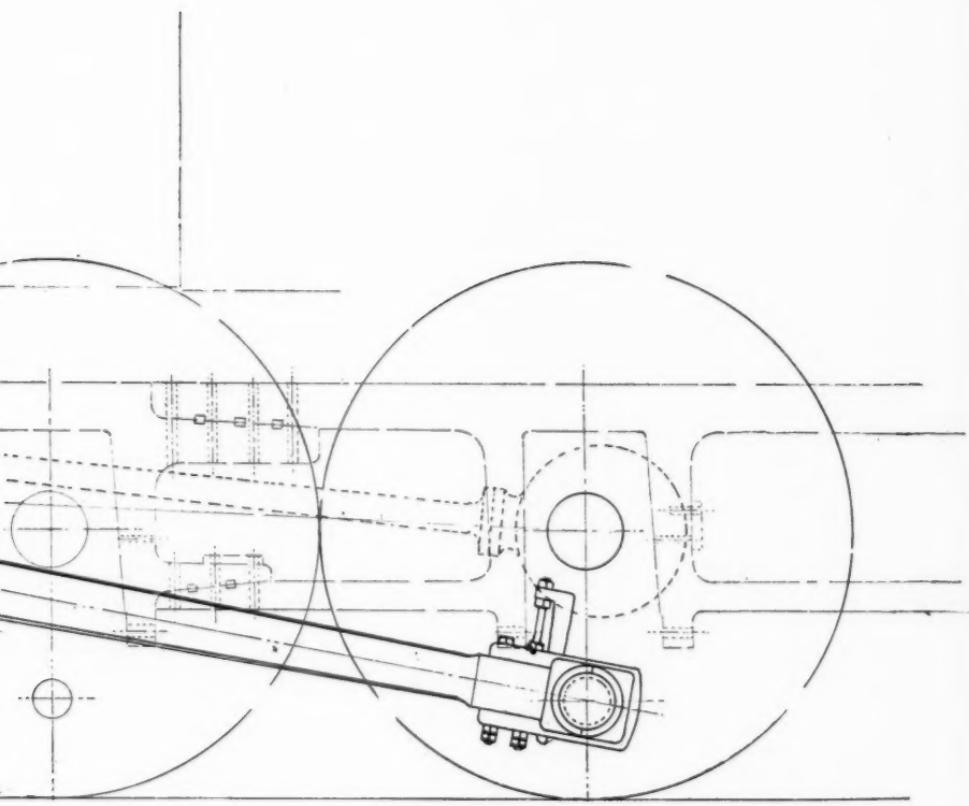
GEAR
IVE C.P. 237, 1883
D IN 1887
ETCHES MARCH 10 1944
Drawn Prepared by D.L. Joslyn

DATA

CYLINDERS 21¹/₂" x 36" STROKE
STEAM PORTS 1¹/₂" I.G.
EXHAUST PORTS 3" I.G.
STEAM LEAD 1"
EXHAUST LEAD 1"
LAP OF VALVES 1"
TRAVEL OF VALVES 4"
MOTION FROM ECCENTRIC 5"



A. J. Stevens Valve Gear applied to C. P. #237, 4-10-0 type, 1883.



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time consumed in getting a train across the straits was 25 minutes, although there were cases where but 18 minutes was consumed in getting on boat, crossing and getting off boat. The ferry boat "Solano" was placed in operation December 28th, 1879, and by means of this boat, the distance from Sacramento to Oakland was shortened from 136 miles to 88 miles. The ferry boat "Solano" continued in service until October 1930, when the new steel railroad bridge was opened for traffic across Carquinez straits.

Stub switches were in use on the Central Pacific, as no doubt they were on nearly, or all of the railroads of the country. In passing over one of these stub switches, the heavy locomotives would, in time bend the ends of the rails and the light cars following would hit the up bent end of the switch, frequently causing derailments. Mr. Stevens set to work on designing a switch that would overcome this and his "Improved Switch for Railroads" was placed on the line of the Central Pacific. It did not differ a great deal from the present type switches, except that the rail against which the switch point rested, was planed out to admit the point to enter and lay snug against the rail.

In connection with his Improved Switch, he also invented and made a switch stand that revolved instead of the older type of stand and lever that was swung toward and away from the rail. Both of these, the switch and stand were still in use on the Southern Pacific when the writer went to work in the Sacramento Shops in August 1902. In fact, some of those old CP switch stands are still in use on branch lines and sidings.

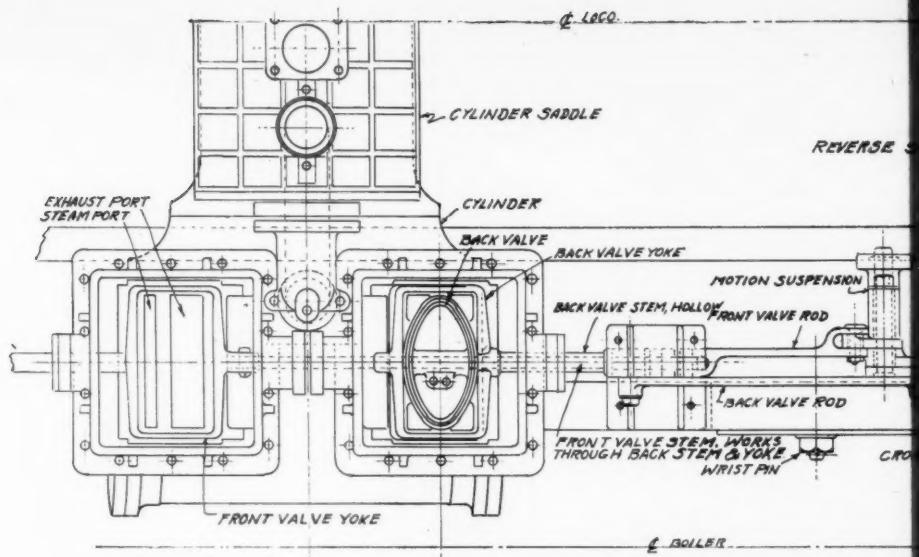
Such simple things as steam cranes, Diesel cranes, cranes that operate on tractor crawlers, and all such modern machinery as we take for granted, were not known during the period in which Stevens lived, or if they were known, they were not in universal use. Small wonder then, that his fertile mind was ever alert to something better, that would shorten labor costs, would speed up the work. Such a simple thing as a small four-wheeled car on which sat a boiler and on a boom swung from the car a long cylinder with its sheaves and cables and the whole thing placed along side the coal pile, enabled three men to coal a locomotive in about one quarter the time that it took when operating a small crane with manpower. This steam crane was later altered to operate by air, taking the air direct from the train line at end of tender. Buckets which held $\frac{1}{4}$ ton of coal were filled by manpower and lifted and swung onto the tender by the steam or air crane. Later, roads using coal for fuel placed dumps so high up that a locomotive could pass under and the coal dumped down onto the tender, but such things were not common if at all during Stevens' time.

Then oil was discovered in California. It was produced at little cost as the oil flowed from the wells and did not require pumping. It was cheap and why not use it for fuel on locomotives and steamers. Result, Mr. Stevens soon had one of the ferry boats equipped to burn oil as fuel and soon all the ferries, bay tugs and boats and the river steamers were burning oil for fuel. In looking over the old oil burning

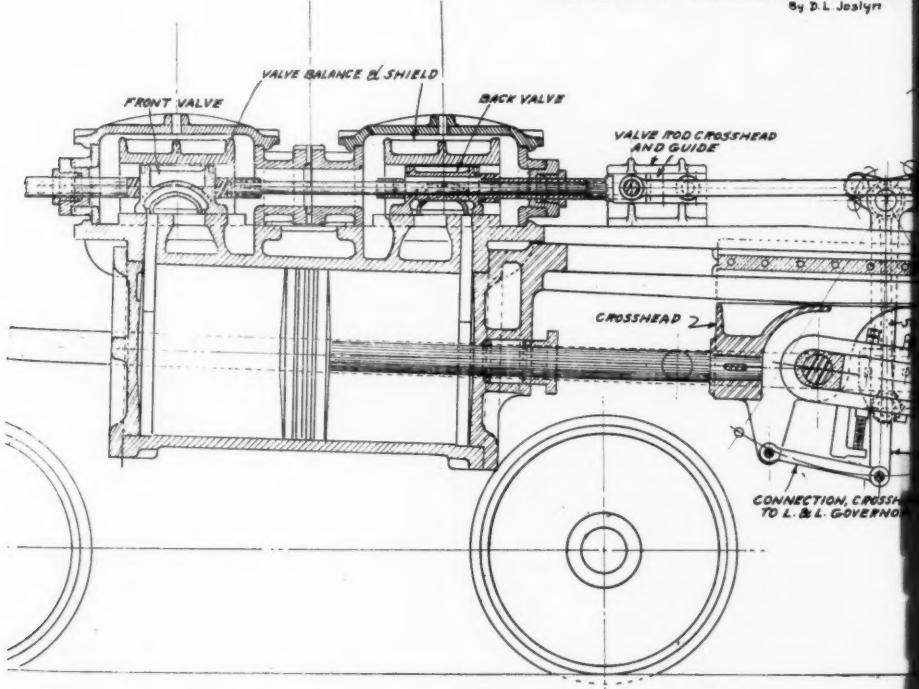
arrangements as invented by Stevens and applied to the boilers, there was not a great deal of difference between his burners and those now in use. Oil was fed to the burner, either by gravity from a tank placed above the boiler, or by a small feed pump. It was sprayed into the fire box by a jet of steam which atomized the oil, spreading the flame. He soon learned that air in the proper place was essential to good oil firing and that drafts on oil fires were a trifle different than with coal. A great hue and cry went up when oil was first placed on the ferries as fuel. "Why he will blow the boats up, they will not be safe to ride on." Some one better stop that crazy Stevens before he blows us all to Kingdom come. But, by 1885 all the boats were burning oil and no explosions took place. Also, a couple of locomotives were equipped to burn oil, the CP 162 being the first one so equipped. Success was just about at hand on the locomotive burners when one night, when a ferry boat tied up, the fireman did not close his oil valve tight, or else it was a leaky valve and oil leaked into the firebox all night and the furnace being warm, generated into gas. In the morning when the fireman lit his fire, the gas exploded lifting the boiler loose from its setting, hurling the fire brick out the firebox door lifting the stack loose from the boiler. That was too much. The oil was condemned from then on and was taken off, only to be applied again in the late 90's. It is the accepted fuel in the West and is used on all kinds of boilers. But when Stevens invented his oil burner and placed oil as fuel on the boats, it was something new and was condemned without trial and had he been the least bit "Chicken Hearted" it never would have been used in his time.

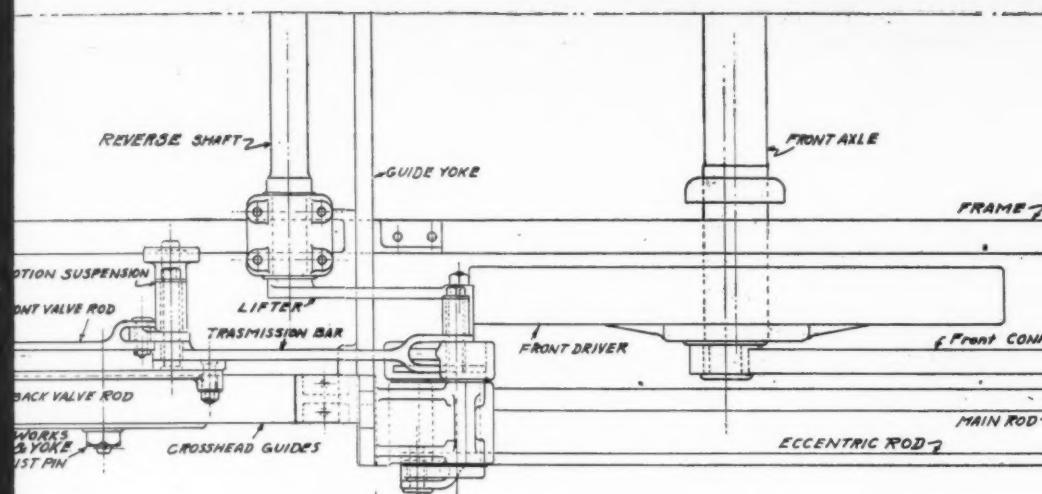
He experimented with a steam bell ringer and it was finally placed on locomotives. This is shown in our drawing. Later when air was applied to locomotives, the bell ringer was altered somewhat to use air in place of steam, and it was always successful even with steam as power. As late as 1918, many SP locomotives were still equipped with this bell ringer and were giving good service. With the Stevens bell ringer, the sound of the bell was more like the sound produced when the bell was rung by pulling the bell rope. There was not that dang, dang, dang of the type bell ringer now in use. In operation, the Stevens bell ringer worked about as follows: The fireman or engineer would open his valves in cab, give the bell a start by pulling on the bell rope. This would take the crank on bell shaft over the center. Air entering the lower chamber would start piston upwards swinging bell, and when piston reached the height where it would cut off the air, the bell would by its own weight swing back and forcing piston down would again open air to cylinder and as bell crank passed center, piston would rise swinging bell in opposite direction. It was not a self-starter, it required a start to get it going.

In common use on locomotives in the 60's and 70's was a piston that was built up of two pieces with a retaining ring securing the two parts together with a row of bolts. Between the two parts was secured one, sometimes two, brass rings made up in segments. This was in place of the present snap rings. Of course, there was not the tight fit that is

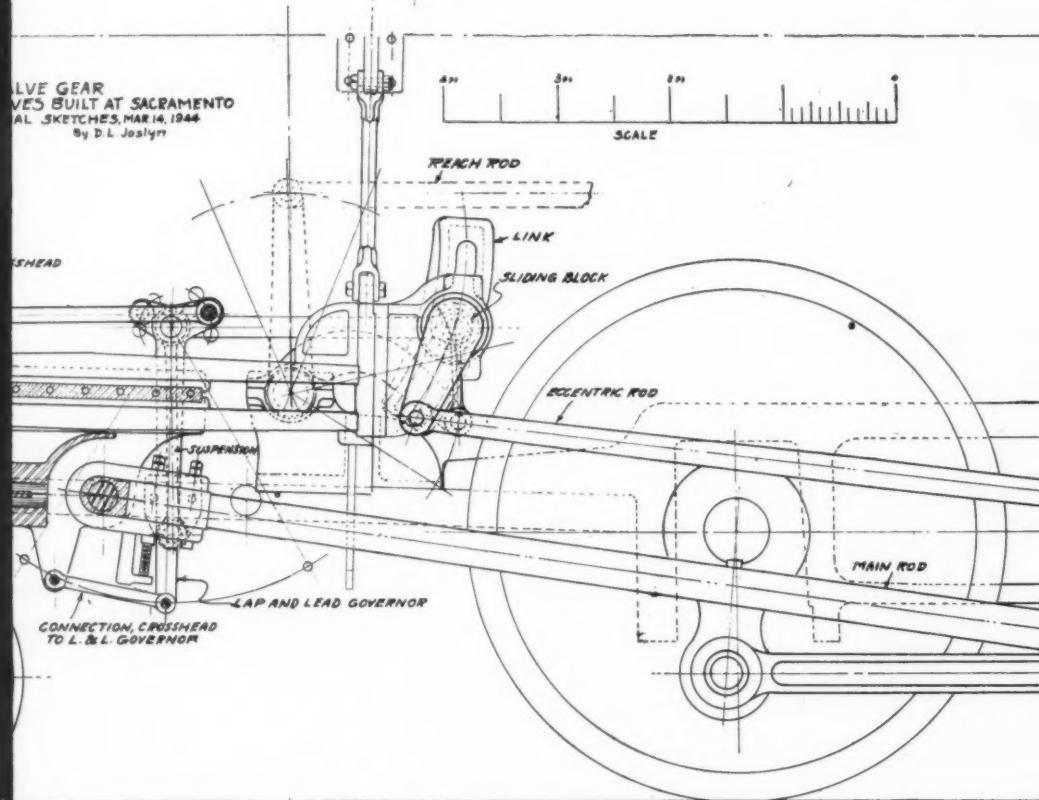


A. J. STEVEN'S VALVE GEAR
AS APPLIED TO LOCOMOTIVES BUILT AT SACRAMENTO
PREPARED FROM ORIGINAL SKETCHES, MAR. 14, 1944
By D. L. Joslyn

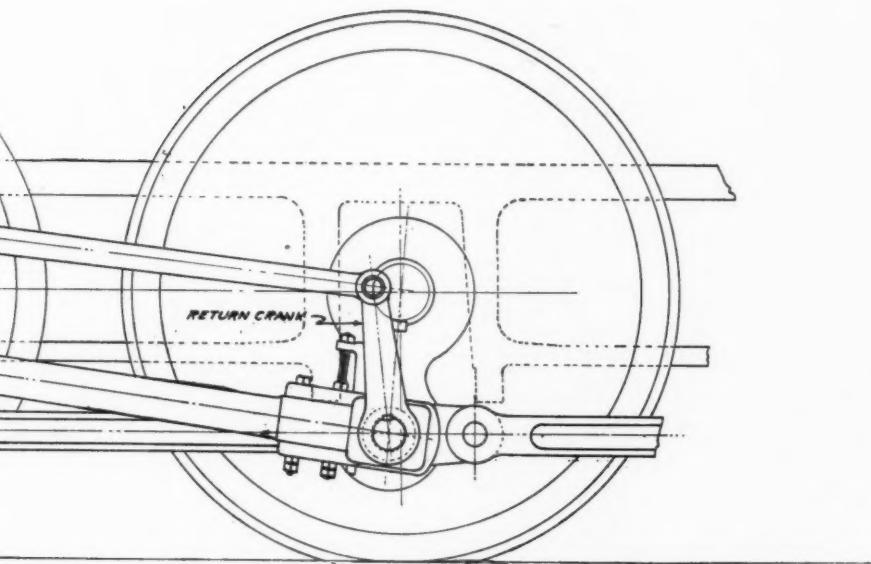
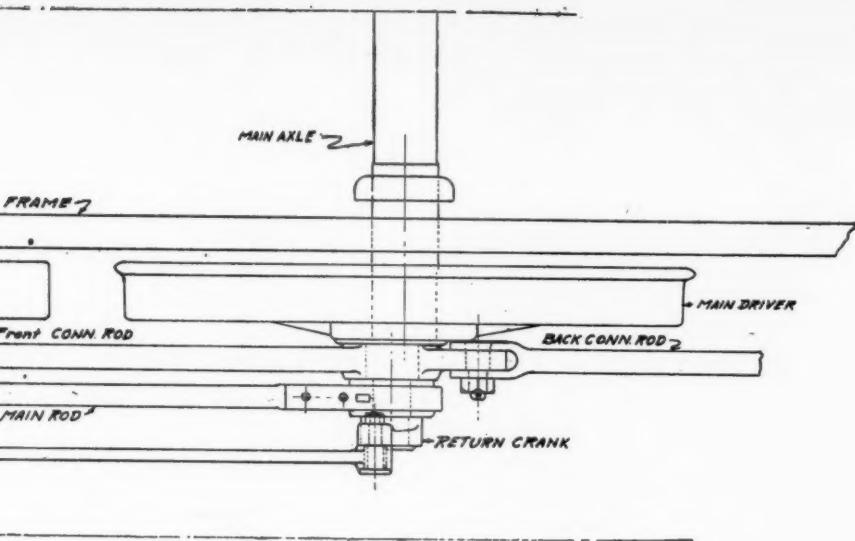




VALVE GEAR
WES BUILT AT SACRAMENTO
AL SKETCHES MAR 14, 1944
By D. L. Joslyn



A. J. Stevens Valve Gear as applied to locomotives built at Sacramento.





secured with the snap rings but it worked and was fairly tight. Mr. Stevens experimented and finally produced a snap ring, that is a ring of cast iron that was turned somewhat larger outside than the bore of the cylinder. This was fitted into a groove turned in the piston and had a cut at an angle and a small piece removed. This would fit tight against the cylinder walls when the piston was placed in cylinder. On this he secured a patent. A sketch shows a section of one type of Stevens' packing rings, the other shows his last type and which was used on the Central Pacific for years with entire success.

He also built and perfected a rail curving machine, operated by steam pressure and which was mounted on a flat car. This allowed bending the rails to the proper radius right on the job, and did away with a lot of hard work. This machine was designed and placed in operation on the Central Pacific as early as 1872 and was a great deal of help and a wonderful saving of time and labor in building the lines down the valley and along the coast.

In the 18 odd years that Mr. Stevens was General Master Mechanic, any problem that arose was taken care of right at home. Seldom, if ever, was it necessary for him to send out for help to some builder or manufacturer, and in these problems, he was assisted by a man, who like Stevens, had worked his way up by his own endeavors. This man was George A. Stoddard and as he was of such great assistance to Mr. Stevens, we will give a short account of him here as it will fit in with this sketch of Stevens.

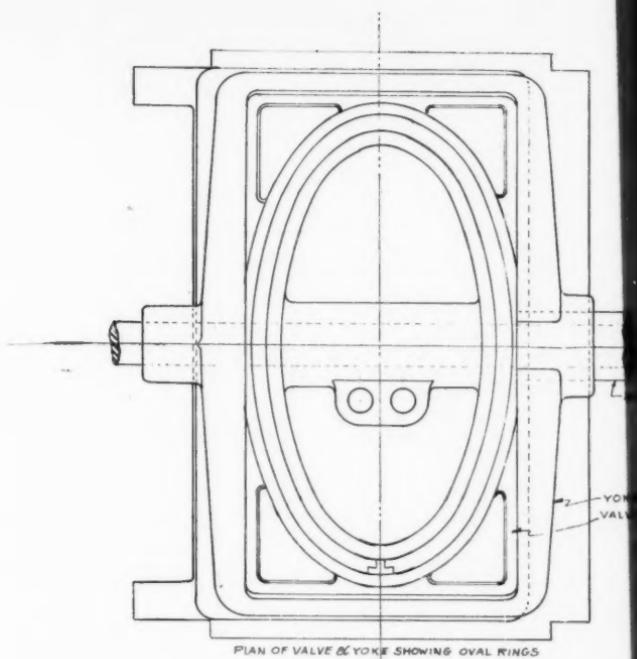
Mr. Stoddard was born at Brattleboro, Vermont, in November 1833. When he was sixteen years old, he graduated from high school and entered service in a machine shop in Hinsdale, New Hampshire as an apprentice. In less than three months after entering the machine shop, he met with an injury that laid him up for over a year, but in that time he studied mechanics and drafting. Finally, after securing light work here and there in various machine shops, he went to work for the Connecticut River Railroad at Northampton, Massachusetts, under Master Mechanic John Mulligan, who finding him apt at figures and a good workman, gave young Stoddard some drafting to test his ability. He successfully made changes in design for the locomotive "Springfield" and was given the position of draftsman. Desiring a change, he went out on the road and in 1860 was for a short time engineer on the Connecticut River Railroad. In June of that year, he was induced by his life long friend, Mr. Sam Gerrish, to go to California. On arriving in California, Mr. Stoddard went to Virginia City, Nevada, where he worked as a mechanic in erecting some mine machinery there. Proving his ability, he was made engineer in charge of erecting the largest quartz mill in the place. His heart was set on railroad work and he soon gave up the mines and went to the shops of the SVRR at Folsom, and after a short stay with the Sacramento Valley Railroad; and a brief period on the San Francisco and San Jose Railroad, he came to Sacramento where he was overjoyed to find his old friends Sam Gerrish and I. H. Graves. One as a machinist, the other as Master Mechanic.

He was given a position as engineer in charge of erecting machinery at the shops which were being built and when Mr. Stevens came to Sacramento to take Graves' place, he recognized Stoddard's ability and placed him in charge of the drafting room as Chief Draftsman, a position which he held until his retirement in 1908. Mr. Stoddard proved of great assistance to Mr. Stevens in working out his various schemes. Many of the old drawings; made years ago on heavy paper and neatly varnished to preserve them, all the handiwork of Mr. Stoddard, are still in existence, although they are getting brittle and will not stand much handling. They are all made in the old style, shaded and colored yellow for brass, blue for steel, green for iron, etc.

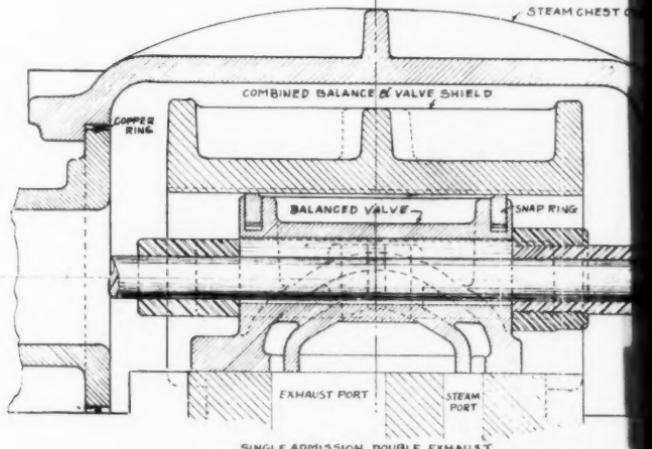
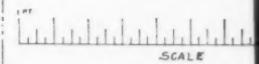
In concluding, we might mention that Mr. Stevens is best remembered by those few men still living who worked under him as a man that had little to say. Mr. Charlie Hill, who worked in the shops as an apprentice, later as a machinist and now retired as a postal employe tells me that Mr. Stevens would come down through the shops with his hands deep in his pockets, his head down as if deep in thought. Nothing escaped him and he might a little later, when seated in his office, send out for some one to tell them a few things, but always in a nice way.

During the depression, or as they called it in those days, "hard times," of the late 70's, many railroads and firms as well, were laying off men, or reducing their pay. Mr. Stevens would not agree to this at all. He kept men at work, at their old pay, just as long as he could and when times got too bad, instead of laying off a man, he shortened his work time. True, the man earned less money, but he was kept at work, which was something when so many were laid off. It was this fairness on his part that endeared him to the men in the shops. And as the late Joel Wilder told me many times, "A. J." was never hard on his men, but he did expect a day's work for a day's pay. "He was always fair to all of us," said Wilder, "but he would not tolerate poor or sloppy work, and loafing in any form, would bring first a reprimand and if persisted in, dismissal from the company service. Even when dismissed from the service, a man had a chance to be re-instated with A. J. and given another chance. Under A. J. Stevens' term as General Master Mechanic, there was never a black list kept of any of the men who were discharged. If another firm wanted to hire that man and A. J. was asked about his record, he would tell just what kind of service he had given the CP and what caused his dismissal. But he would not be given a black name or character. Small wonder then, that at his death, the men assessed themselves to build in stone and bronze a lasting memorial to him who had been "A Friend to Labor."

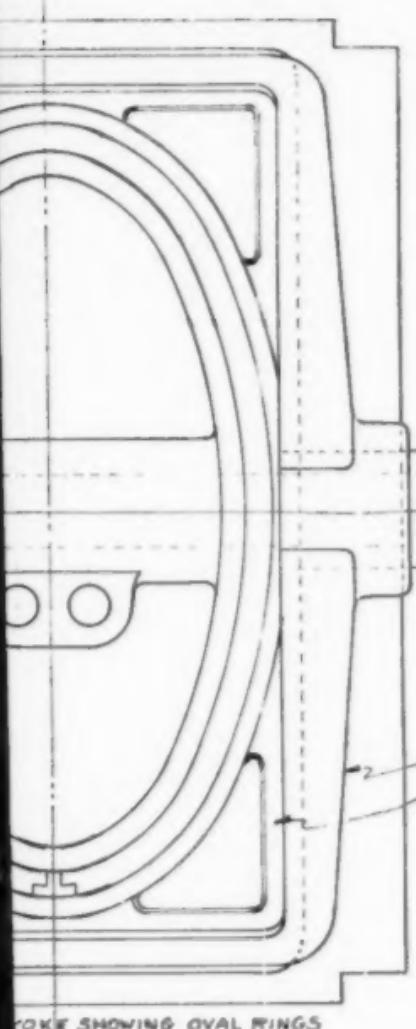
Following is a list of the locomotives built, or equipped with the A. J. Stevens' valve gear in the order in which the gear was applied, either by being built as a new or rebuilt locomotive; or as in a few cases, applied to an existing locomotive:



PLAN OF VALVE & YOKE SHOWING OVAL RINGS



A. J. Stevens Balan



YOKE SHOWING OVAL RINGS

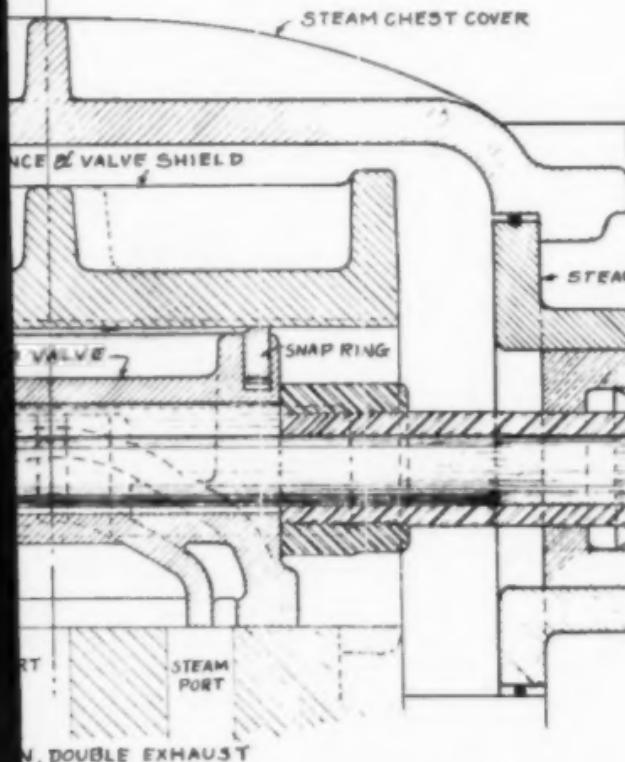
FRONT VALVE ROD
BACK VALVE ROD

YOKE
VALVE

COMBINED BALANCE AND
VALVE SHIELD

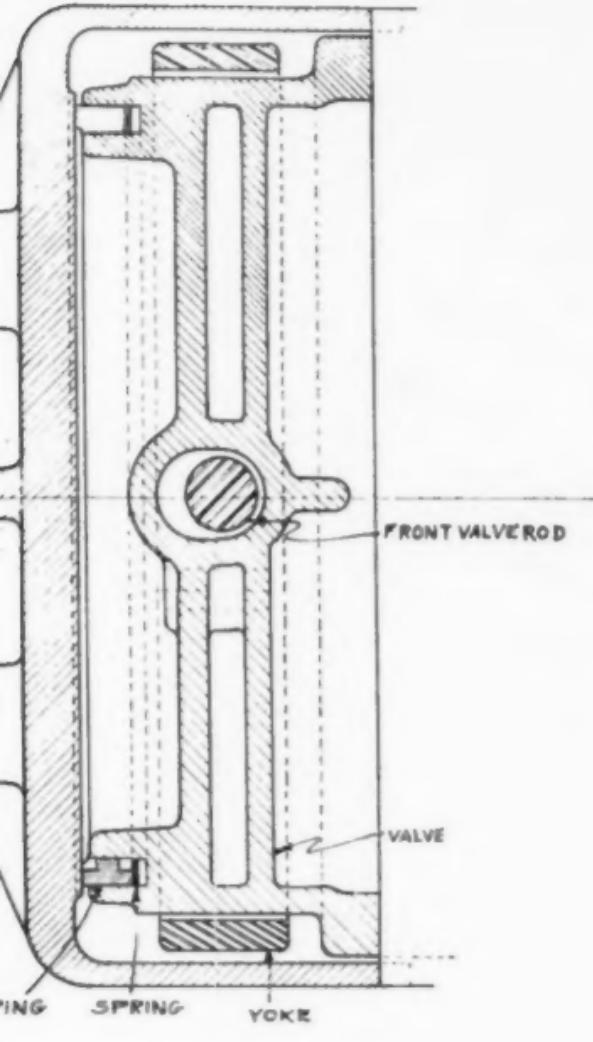
SNAP RING SPR.

SCALE



BALANCED VALVE
LOCOMOTIVES by A.
Dwg Prepared by D.L.J.

A. J. Stevens Balanced Valve.



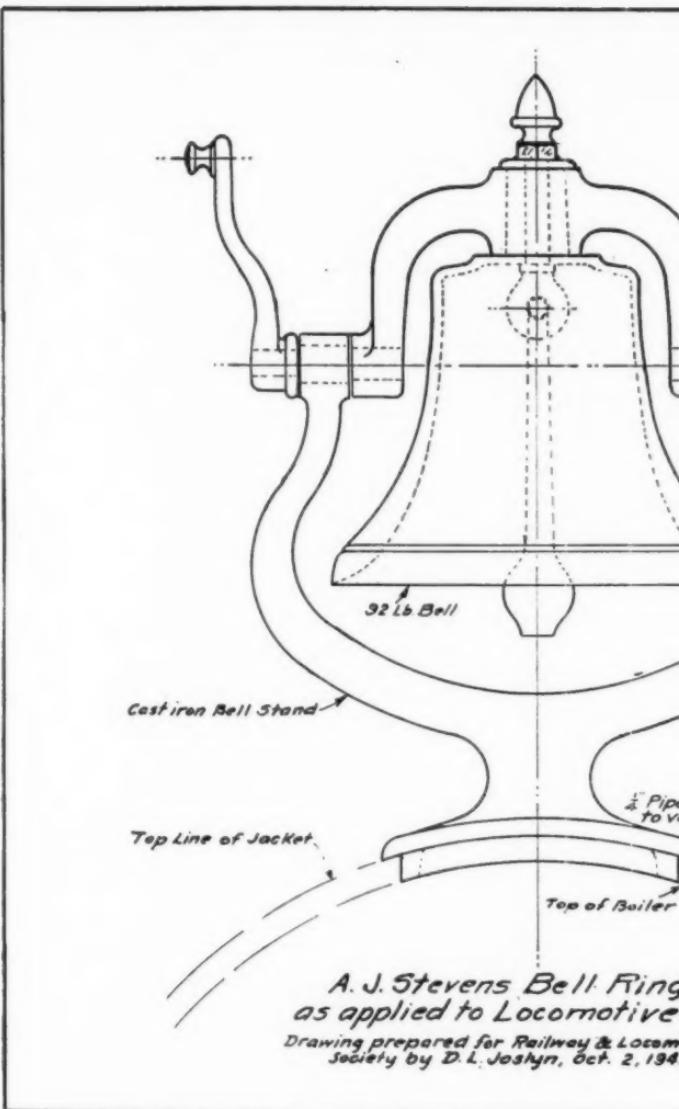
D VALVE AS APPLIED TO
TIVES by A. J. STEVENS.
ored by D L Joslyn, Jan 12, 1944

USHING, PRESSED IN
SS GLAND

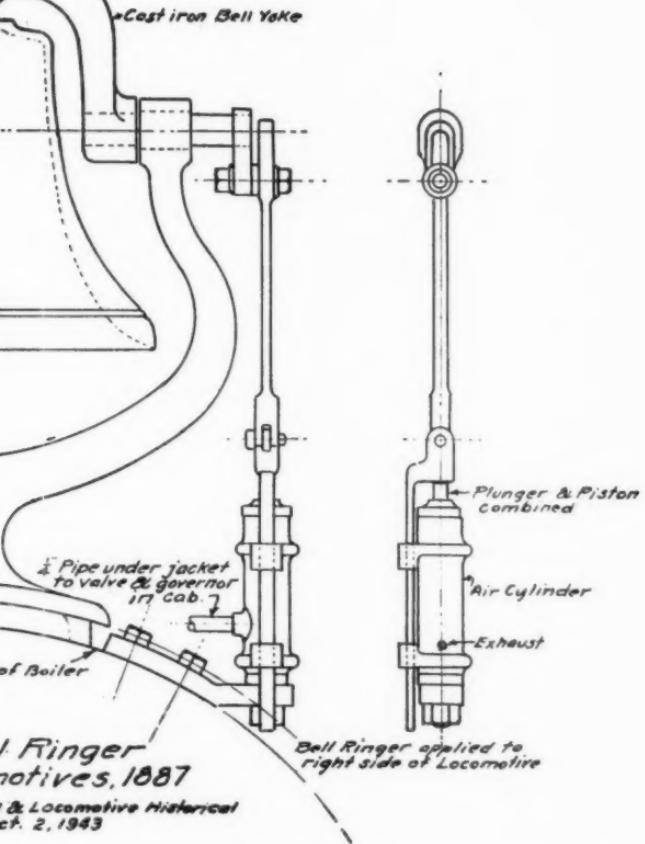
ACK VALVE ROD



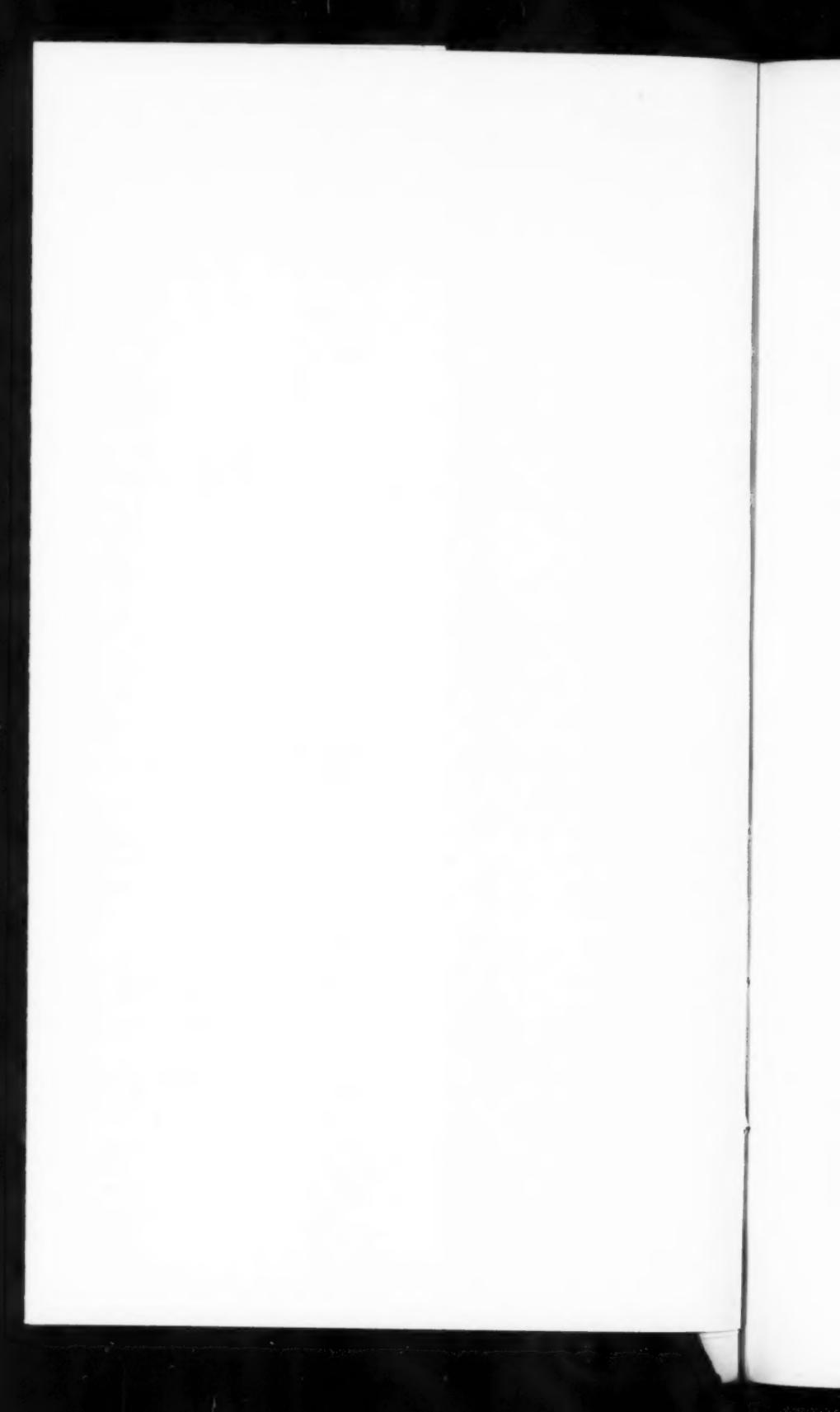
FRONT VALVE ROD



A. J. Steven



J. Stevens Bell Ringer.



<i>Number</i>	<i>Date</i>	<i>Cylinders</i>	<i>Drivers</i>	<i>Weight</i>	<i>Type</i>
CP 237	1883	21x36	57	146000	4-10-0
CP 18	1884	17x30	56	90000	4-6-0
CP 48	1884	17x30	54	85000	4-4-0
CP 19	1885	18x30	56	112220	4-6-0
CP 122	1886	17x26	69	88500	4-4-0
CP 123	1886	17x26	69	88500	4-4-0
O&C 49	1888	19x30	51	113350	2-8-0
SP 222	1888	19x30	51	114850	2-8-0
SP 236	1888	19x30	51	114850	2-8-0
SP 237	1888	19x30	51	114850	2-8-0
SP 238	1888	19x30	51	114850	2-8-0
SP 239	1888	19x30	51	114850	2-8-0
SP 240	1888	19x30	51	114850	2-8-0
SP 241	1888	18x30	57	108400	4-6-0
SP 242	1888	18x30	57	108400	4-6-0
SP 243	1888	18x30	57	108400	4-6-0
CP 246	1888	18x30	57	105100	4-6-0
CP 247	1888	18x30	57	105100	4-6-0
CP 248	1888	18x30	57	105100	4-6-0
CP 249	1888	18x30	57	105100	4-6-0
SP 264	1888	18x28	68	98000	4-4-0
SP 265	1888	18x28	68	98000	4-4-0
SP 266	1888	18x28	68	98000	4-4-0
SP 267	1888	18x28	68	98000	4-4-0
SP 268	1888	18x28	68	98000	4-4-0
SP 269	1888	18x28	68	98000	4-4-0
SP 270	1888	18x28	68	98000	4-4-0
SP 271	1888	18x28	68	98000	4-4-0
SP 272	1888	18x28	68	98000	4-4-0
SP 273	1888	18x28	68	98000	4-4-0
SP 51	1888	20x30	54	124000	4-8-0
SP 53	1888	20x30	54	124000	4-8-0
SP 55	1888	20x30	54	124000	4-8-0
CP 125	1886	17½x24	69	88500	4-4-0
CP 166	1886	17½x24	69	88500	4-4-0
CP 175	1886	18x30	56	106800	4-6-0
CP 177	1886	18x30	56	106800	4-6-0
CP 238	1887	18x30	57	105100	4-6-0
CP 239	1887	18x30	57	105100	4-6-0
CP 240	1887	18x30	57	105100	4-6-0
CP 241	1887	18x30	57	105100	4-6-0
CP 242	1887	18x30	57	105100	4-6-0
CP 243	1887	18x30	57	105100	4-6-0
CP 244	1887	18x30	57	105100	4-6-0
CP 245	1887	18x30	57	105100	4-6-0
SP 217	1887	18x28	68	92650	4-4-0
SP 218	1887	18x28	68	92650	4-4-0
SP 219	1887	18x28	68	92650	4-4-0
SP 220	1887	18x28	68	92650	4-4-0
SP 221	1887	18x28	68	92650	4-4-0
SP 213	1887	18x30	57	108400	4-6-0
SP 214	1887	18x30	57	108400	4-6-0
SP 215	1887	18x30	57	108400	4-6-0
SP 216	1887	18x30	57	108400	4-6-0
O&C 44	1887	19x30	51	113350	2-8-0
O&C 45	1887	19x30	51	113350	2-8-0
O&C 46	1887	19x30	51	113350	2-8-0
O&C 47	1887	19x30	51	113350	2-8-0
O&C 48	1888	19x30	51	113350	2-8-0
SP 56	1888	20x30	54	124000	4-8-0
SP 58	1888	20x30	54	124000	4-8-0

I wish to extend my thanks to the following who assisted me in preparing this brief sketch of A. J. Stevens.

Dr. A. Jackson Stevens, Grandson of A. J. Stevens, the late Fred Douglass, former employe of Garrett Bros. Foundry and retired machinist SP shops; Chas. A. Hill, former employe under Stevens; Chas. A. Root, personal friend of A. J. Stevens; Carolyn Wenzel, librarian, California Section of California State Library; Elizabeth O. Cullen, reference Librarian, A. A. R. library, Washington, D. C.; George A. Uhl who as a boy was present when monument was unveiled; Mrs. C. T. Noyes for sketch of life of George Stoddard, SP Co. for portrait of A. J. Stevens and picture of M. P. officials of 1876; Mr. A. B. Wilson, Supt. M. P. Southern Pacific Co. at Sacramento, for permission to search old files at Sacramento Shops; S. P. Bureau of News at San Francisco; Mr. Chas. E. Fisher of Waban, Mass., and last Miss Elizabeth M. Williams for typing the article for me. In passing, I might mention that the old files of the Sacramento Union in the State Library were of great value in preparing this sketch.

Selected Items From the Minute Book of The Galena and Chicago Union Railroad Company

With a Foreword and Comment

By D. W. YUNGMEYER

Recently, by courtesy of the Chicago and North-Western Railway, I had the privilege of reading the original minute book of the Galena and Chicago Union Rail Road Company. Learning of this, your President, Mr. Chas. E. Fisher, suggested that some extracts therefrom might be of interest to you as members of the Society, so to that end I have selected some of the minutes dealing with the lesser known activities of the corporation and loosely tied them together with some comment. They are roughly in order as they appear in the transactions but in some instances where the same subject appears in more than one place those items are gathered together for a clearer view of the transaction. Some misspellings and curious punctuations will be noted but wherever these appear in quotations I have carefully rendered them as they appear in the record.

At the start we may speculate a bit as to how this old book, rebound lately but otherwise as it was, came through the Chicago Fire of '71. We may perhaps think of some faithful few employees risking their lives in trying to save valuable papers, frantically endeavoring to secure some sort of conveyance to carry away to safety the books and other records of the company, and only succeeding after heroic efforts that deserve some fuller mention than can be made here. Or we may suspect that foresight and quick action in organization facilitated the removal of these objects in time. I do not know.

The minute book, in two volumes, the contents protected by new bindings, is beautifully preserved, the ink standing out from the pages just as clearly today as when it was applied by Mr. Francis Howe, and later Mr. W. M. Larrabee, Secretaries of the Company. The entries up to and including April 5, 1847, are copies, so noted. What then was the appearance of the very first minute book? It is possible that minutes of the early meetings were simply noted on loose sheets of paper, but at the meeting of August 4, 1836, the President, Theophilus W. Smith, was requested to procure stationery, books, and a seal for the company, as well as an iron safe for their preservation. Quite possibly when William B. Ogden was elected President of the company, and Francis Howe Secretary, a different size of record book was determined upon and this may explain the copying. Some eleven hundred pages constitute the record of the meetings of the Board of Directors, the Annual Stockholders' meetings and the Orders of the Executive Committee, many of the pages being fully covered on both sides.

It is a very human document, this old book, reflecting much that is unwritten, revealing in the early entries a great enthusiasm unfortunately not supported by any practical knowledge of the tremendous task proposed; giving us a glimpse of that most amazing young man, Elijah Kent Hubbard, second president of the corporation, who, had he not passed on at the age of twenty-six, might have become one of the great men of the middle-west; giving us more than one dark hint of the trials and troubles of the panic years in which only fortunate circumstance kept life feebly flowing in the veins of the struggling young road; and finally opening out the broad picture of the development of the territory to the west of Chicago, every detail of which was carefully considered at length by William B. Ogden, his successors, and the Board of Directors before making it a part of the whole.

The Directors, throughout the history of the Galena Road, served without pay, giving unstintingly of their time as will be witnessed in the pages of the record wherein we find many meetings called at ten o'clock in the morning, recessing for luncheon, convening again after an interval of an hour to resume work until time for dinner, and in the evening reconvening again for a longish session. Their only income from the road was had from holdings of its stocks and bonds, and from legal and banking services rendered in the course of the company's business, in addition to which from time to time certain committees were appointed to audit the books of the company and perform other services for which the board voted a sum of money to be paid them. The President was the only member of the board to receive a regular salary. It must not be thought that all the members of the board attended every session, rather it was a rare occurrence to find all the members noted by the secretary as being present.

The Directors were not indifferent to the needs of families of employees who lost their lives while in the service of the company as will be noted in several cases of record, the first of which appears on October 7, 1852, when a gratuity of \$25 was allowed Mrs. Patrick Duffy, whose husband was killed in the gravel train accident at Elgin in April, 1852. In another case, "because of poverty" and on request of the widow, that she might earn a living, a sewing machine was given on behalf of the company. The most complete record we have of the feelings of the board in these matters is of record November 2, 1853, when we find this preamble and resolution: "Whereas, the Board having been informed that Charles Gary, an engineer in the employ of the Company, was accidentally killed on the 31st October, while conducting his train westward; Resolved, that, in the death of Mr. Gary, the company have lost an honest, upright and intelligent officer, whose place it will be difficult to fill; and inasmuch as Mr. Gary has left a Widow and three small children who were wholly dependent upon his labor for their support, and with a view to relieve the wants of those who are thus deprived of their natural protector and father, it is further resolved that the Sum of five hundred and forty dollars be paid to his Widow, it being the sum which would have been due him for his year's services if

his life had been spared." Many small claims were settled from time to time on the basis of donations, the recipient in each case signing away all further rights in the matter.

The Directors, from the election of Ogden, et al, were minutely careful in taking forward steps, making sure that they did not exceed the powers granted in the charter and amendments thereto, one of the first actions being to appoint a committee of three lawyers to examine the charter to determine whether "by omission or commission any rights have been forfeited, lost, or in any wise affected." This care was exercised throughout the history of the Galena Road and the letter of the law was not at any time ignored, committees repeatedly being named to determine just what could and could not be done and ordered to report to the board in writing on the matter at hand.

A quotation from "Yesterday and To-day," that excellent history of the Chicago and North-Western Railway System (compiled by W. H. Stennett), may well serve to begin the ending of these preliminary remarks—"We have . . . seen it grow from a mere name on paper until at last it became a fact, and soon the leading railroad of the west. It was *the* leader in nearly everything that belonged to railroad operation. In financial standing and credit it was without a peer. It had the best, largest, and most modern locomotive engines. Its cars were inferior to those of no other road. It built the first and had the best passenger depot in Chicago, and better facilities for handling freight than any other road there." Every word of this is true. The Galena and Chicago Union Rail Road Company served as the model for all other railroads in the West and if, and when, others failed it was not the fault of the model, but rather the fault of those whose efforts could not match the works of the men who built Chicago's first Rail Road.

The first meeting of the original subscribers to the capital stock of The Galena and Chicago Union Rail Road Company was held, in Chicago, Illinois, in the office of Ebenezer Peck, an attorney, on May 23, 1836, the same day subscriptions to the stock were opened, the first Board of Directors being then and there elected. On July 3, 1836, the board met and elected Theophilus W. Smith to the office of President, and William H. Sabine, not a director, was appointed Secretary and Treasurer. Two days later the board held another meeting at which the first piece of business was transacted, a resolution authorizing the President and Secretary to negotiate a loan "not exceeding the amount authorized by the Charter." Although 1,000 shares of stock, par value \$100,000, had been subscribed only one dollar per share had been paid in, which made the total assets of the company \$1,000 and the charter, yet according to the terms of that charter up to \$100,000 could be borrowed, or to be more exact, any amount up to the total amount of the capital stock of the company.

August 4, 1836, saw the board authorizing the increase of the capital stock by \$400,000, and the further resolving "that the Board will

forthwith proceed to construct a railroad from the O'Planes (Des Plaines) River to the town of Chicago," and a committee appointed to secure the right of way. Nothing further happened until the meeting of November 16, 1836, when President T. W. Smith reported conversations and correspondence with the Postmaster General of the United States relative to the road receiving a grant of land, whereupon the directors decided to memorialize Congress in the matter and a draft of the memorial was approved. This memorial was presented to the Senate on January 3, 1837, but, although it had the approval of the Postmaster General and the Chairman of the Committee on Roads and Canals, the resulting bill did not get beyond a passage to the second reading. No more was heard of it, and with this attempt we see the closest approach the road ever made to receiving governmental aid at any time during its history.

No meetings are of record until June 1, 1837, when the report of James Seymour in the matter of his survey of the proposed line or route from Chicago to the Des Plaines River was discussed and adopted. The board then directed the secretary to open and keep stock books; set up rules for the transfer of stock; determined that officers should hold office for one year only; ratified its actions in preceding meetings; and determined how stockholders should vote. It was not until November 20, 1837, that the next meeting was held. James H. Collins was appointed Secretary, and it was decided to hold a stockholders' meeting next day. A very important step was taken at this meeting when it was decided that the directors and officers of the corporation should hold office for one year, or until their successors were elected. This is the "fortunate circumstance" referred to above and probably what saved the company during the long years of inaction.

At the stockholders' meeting of November 21, 1837, a new set of directors was elected, only James H. Collins remaining from the original list. The record of stock certificates issued as of August 9, 1836, and held until November 20, 1837, as shown on the pages of the minute book, lists thirteen subscribers in possession of 1,975 shares of stock, no one of them holding more than 225 shares. After the transfers of November 21 and 22, 1837, we find twelve individuals listed as holders of a total of 1,975 shares, of which Elijah Kent Hubbard had 1,520 in his name. Thus the road became a "one-man" organization. Hubbard, second president of the corporation, began the first construction, supervising the driving of a line of piling and the laying of stringers along the line of West Madison Street in Chicago in the Fall of 1838 which, remaining constantly in view during the ten-year stoppage of activity in the construction of the road, were a constant spur to editors and others who helped keep the subject alive.

The Board did not meet officially again until December 29, 1845, with four of the seven directors in attendance, the minutes showing only that a stockholders' meeting was to be called for February 17, 1846, by the device of inserting a notice in "the Chicago Daily Papers for 40 days." The reason for these two meetings was the famous Rockford

Railroad Convention of January 7, 1846, generated in the counties on the western portion of the proposed line for the purpose of getting speedy action in the matter of a railroad. At the convention the Chicago group was so well organized that it practically took over all the official chairs, committee heads, and about everything else, and because of its readiness with resolutions, statistics, and so on, secured the whole-hearted consent and approval of the 319 delegates, attending from ten counties, to everything proposed by the Chicago men.

The stockholders then, at the meeting of February 17, 1846, elected William B. Ogden President, and Francis Howe was appointed Secretary. The other six men elected as directors of the corporation were: William H. Brown, Walter L. Newberry, Thomas Dyer, J. Young Scammon, C. Walker, and James H. Collins. These men, all Chicagoans, whose number was to be increased to thirteen later, built The Galena and Chicago Union Rail Road. It is worthy of mention that every man on this Board had a large part in the building of the City of Chicago.

These notes bring us up to the point at which Bulletin No. 27 begins, so the following items have been selected with a view of not duplicating Mr. Fisher's excellent rendering of the annual reports of the road.

On August 24, 1847, an office was taken by the company in "the Brick Building on La Salle Street, to be furnished with the necessary chairs, desks and tables, in a plain manner," but on the 30th day of the same month this idea was abandoned, a lease being authorized to secure Rooms 12 and 13 in the Merchants' Exchange at a rental of \$150 annually, and the first official meeting in the new office held October 9, 1847. On December 18th of this same year we find a minute which states that the first cars have been ordered from Mr. Avery, of Detroit. Two of these cars were to have four wheels and two were to have eight.

The year 1849 furnishes us with several interesting notes which will be quoted without mention of the year date again. On May 5th the board went on record as follows: "Resolved, that this Company have never entertained any desire, intention or purpose in relation to the western termination of the Galena and Chicago Union Rail Road than to make it at Galena in the County of Joe Daviess and that no proposition has ever been made or entertained by the Directors or either of them to make any other western terminus and it is the determination of this company to push forward said Road in as direct a course as practicable, to Galena, as soon and as fast as means can be obtained for that purpose and any diversion of said road from Galena would be a violation of good faith, a fraud on the stockholders and an illegal perversion of the charter." This was unanimously approved at the annual meeting of the stockholders, and reiterated by the board on October 31st. July 6th brought forth a resolution "that it is the policy of this Company not to operate its rail way upon the Sabbath, and this Company will not run its cars upon that day except in such cases of Special necessity as may justly make an exception to this policy."

And on July 21st the board once more resolves on the same matter. Another minute of July 6th sets forth "that the Directors of this company and they alone, shall have the privilege of franking persons over the Rail Road and that it be made the duty of the Conductor to report the names of all persons who may be franked with the names of the Directors who have given them free passage." Soon after this a "dead-head" committee was appointed to supervise the issuance of passes and there are many resolutions spread upon the record dealing with its activities, of which the one of December 22, 1854, may be of interest: "Resolved, that the Superintendent of the Road be authorized to concur in any general arrangement that may be adopted by the Rail Road Companies whose Roads terminate in Chicago, in relation to the giving of passes to clergymen and persons attending conventions; but it is the opinion of this Board that half-fare tickets ought to be granted to all settled clergymen living upon the lines of the respective roads, who devote their time exclusively to the duties of their profession." One more entry from this busy day and we leave it: "Resolved, that whenever a Rail Road in connexion with a continuous line of road to Lake Erie or Detroit River shall be in progress of construction between Michigan City, and the west line of Indiana, in a direction toward Chicago and this company can have assurances, that such road will be speedily built, this Company will be ready to construct the road from Chicago to said line of Indiana to connect with such road on just and fair terms, reserving to ourselves, the right to secure connections with the Michigan Central Rail Road and other roads on such terms as may be fair and just to all parties." This proposed construction on the part of the Galena Road was to have been known as "The Indiana Branch of the Galena and Chicago Union Road." The charter permitted the building of branch lines anywhere in Illinois so long as those branches actually connected with the main stem and thus the line could have been extended to the Indiana State line. A new organization headed by William B. Ogden and including some of the directors of the Galena Road was formed and secured the charter rights, dating from 1835, of the Buffalo and Mississippi Railroad Company in 1847 during which year \$300,000 of a capital stock increase of the Galena company was set aside for construction purposes. Nothing was done, however, and in 1849 control passed from the hands of the Chicago men to a new group under the name of The Northern Indiana Railroad Company and the prize of an eastern connection went to another Chicago railroad in 1851.

It is unfortunate that so few entries deal with the purchase of motive power and rolling stock and thus give us a clearer picture of the additions in time and number. An entry of October 13th, of this year, authorizes the Acting Director (to all intents and purposes the General Superintendent) to purchase or contract for the construction of another locomotive. This may have been "Illinois," No. 4, from Norris and Brothers, placed on the rails in 1851.

We find another resolution, of October 31st, "that it is the *interest* and *policy* of the Company to extend the road westward from the Fox

River as rapidly as possible and that to accomplish this it is necessary that the Counties along the line of the road, and the City of Chicago, should avail themselves of the law of the last session; in which event we do not doubt the amount of means thereby obtained together with what have been raised heretofore and the favorable results arising from the operations of the Road since its commencement will place the credit of the Road on such a basis as to enable the Board speedily to extend the road westward." This was the attitude of the board toward the citizens along the line from the time of Mr. Ogden's election to the presidency of the road until the consolidation. Remember, when it was finally decided to build, money was scarce and it was only because of the energy of the board, headed by Mr. Ogden, that money in sufficient amount to begin construction was raised among these same citizens, so it was the position of the board that those who had made construction possible should have the first opportunity to secure additional stock in the company, and this policy was adhered to until the end. But the board was not disposed to be lenient with those who did not fulfill promises made at the time of subscription to the stock of the company, as witness the action of February 26, 1850, on which day 246 subscribers to 572 shares of stock were notified that the sums paid on such stock were declared forfeited to the company, and these shares were then offered to bona fide stockholders on a pro rata basis, but each stockholder proposing should be entitled to at least one share, on which an initial payment of \$69.00, received as \$75.00, was to be made, the balance to be due when called for.

Preceding this last noted action of 1850 the board fixed the rate of fare in the "Accommodation Car" at two cents per mile and a scale of commutation rates of passenger fare presented by Mr. J. Turner was adopted. Now going once more to the meeting of February 26th, which was a busy day indeed, we find the first dividend declared, ten per cent, payable in stock certificates convertible into stock of the company. In this same meeting the position of the company was again put forth in a resolution which stated "that it is the policy and determination of this Board to complete the Road to Galena at the earliest possible day; and that this Company will not undertake the construction of any lateral or branch roads interfering with this determination, or calculated to retard the construction of the road to Galena, but this Company is anxious to form connections with all such other roads, as will advance the business of this road and increase the public accommodation." And then went on to state "that in the opinion of this Board, the construction of the Rail Road from Madison to Beloit, in Wisconsin, and the connection of such road with the Galena and Chicago Union Rail Road when the latter shall reach Rock River, would greatly augment the business of this road and add to the public convenience, and this Board pledges itself that after the Second Division of the Road shall be completed and in operation to the Rock River this company will agree to unite with the Madison and Beloit Road by a lateral road from a point at or near the western terminus of said Second Division to a line between the

States of Illinois and Wisconsin as soon as said Madison and Beloit road shall be completed and in operation the whole distance from Madison to Beloit or from Beloit to the mouth of the Catfish River." Apparently there was some underhanded work going on in Stephenson County for, still February 26th, "to prevent all misapprehension or misrepresentation upon the Subject the Board of Directors hereby declare their uniform and unalterable determination to locate said road through the County of Stephenson." One more note on this, the longest meeting as yet held, and we proceed after reading a minute disposing of a claim for damages by reason of a horse being killed "by contact with the train of Rail Road Cars" by referring it to Mr. John B. Turner, Acting Director, for disposal. This is the first claim of its kind to appear on the records of the corporation.

As we read the pages of this old book we cannot but be impressed by the very apparent interest taken in the road by its stockholders and patrons, for time after time we come across minutes disposing of petitions, or delegations, by courteous but firm statements of the determination of the company to adhere to its plan of working always westward toward its goal, foregoing all plans for sectional developments not in direct connection with the line already in operation. The board was not deaf to this interest for it endeavored with all speed to complete the road to the communities so anxiously awaiting service, as witness an urgent minute of April 19, 1850, in which the Chief Engineer is directed to report to the board at the earliest practical moment a detailed estimate of the cost of "constructing so far as to put into operation that portion of the line extending from Elgin to Dundee, thence to Marengo and Belviderre," together with his opinion as to the time each section might be put into operation, "having in view the greatest economy in their construction, provided the necessary funds can be obtained therefor," and followed this by opening books of subscription in ten towns and villages along the line and in several eastern locations.

At the conclusion of the long series of minutes of this day we find the signature of Mr. Francis Howe, Secretary and Treasurer, lacking the customary flourishes with which he was accustomed to underline his attest. He must have been very tired for it was a long day and he had worked hard at his dual position for four years, in all that time never failing to trail his signature with an extended sequence of lateral figure-eights. We wonder if he had a premonition that he was to lose his life in the cholera epidemic that swept the city during the summer.

On July 3, 1850, the citizens of Beloit, Wisconsin, having petitioned the road in the matter of the construction of a branch, we find, in a long preamble and series of resolutions dealing with the matter, the board departing from its previously stated "determined" stand, under certain conditions, and here, too, we see for the first time the secretary using the abbreviation G. & C. U. R. R. Co. The board also resolved "that the stage passengers hereafter pay the same rate of fare as is or may be charged other passengers over the road, but that the necessary stage agents pass over the road without charge until otherwise ordered—

Provided the Stage companies will carry the directors and agents when on business of the Company without charge in their stages." Then ordered "the wages of Messrs. Allen & Wiggin Train Conductors in the service of this Company to be fixed at the rate of \$550 per annum, each."

The last entry in the handwriting of Francis Howe is found as of July 13, 1850, and at the next meeting of the board, the first held away from the offices of the company, in the Town of Elgin on September 25th, William M. Larrabee was appointed to the post of Secretary and Treasurer. Two months later we find that "S. W. Hotchkiss, Esq., President of the Milwaukee, Galena and Chicago Telegraph Company presented a proposition and contract in relation to a line of telegraph from St. Charles to Chicago, but after some discussion it was laid on the table." Farther down in the minutes of this day we read that in recognition of the fact of F. Howe, "late Secretary and Treasurer of the Company, having remained at his post during the prevalence of the cholera last season, faithfully discharging the duties of said offices, in consequence of which he probably became a victim of said disease," one quarter's salary, less certain deductions, was voted his widow.

1851 did not produce much that need be set down here save for two or three items, the first of which is that of March 5th when the board appointed "a committee consisting of W. B. Ogden, President, John B. Turner, Superintendent, and seven members of the Board and John Van Nortwick, Chief Engineer, or any three of them, to proceed to New York as soon as desired by the Central Rail Road Company to ratify the agreement entered into by the Hon. Robert Rantoul, Jr., on the part of the Illinois Central Railroad Company, and John B. Turner in behalf of the G. & C. U. R. R. Co.," and to negotiate for a proper connection of the G. & C. U. with the Galena Branch of the Central R. R., subject to the approval of the board. In November a committee was appointed to "negotiate" with the same company for a connection at Freeport and also to arrange for depot grounds, etc. This is the first concrete evidence we have of the board's intention to abandon its "expressed determination" to construct a line to Galena. June 3rd saw the resignation of William B. Ogden accepted, both as President and member of the Board of Directors, but there are straws in the wind that lead us to believe that from this time until the consolidation he worked very closely with the Galena Road. November 20th produced the first claim for lost baggage, a trunk and contents, which was referred to the Superintendent for settlement.

The first entry of 1852 finds the Aurora Branch Rail Road proposing to purchase cars from, and exchange locomotives with, the G. & C. U. R. R. Co., and on the next day the following is placed on the record: "Sold to Aurora Branch four covered cars marked "A. & B." and numbered 21, 22, 23, and 24, for \$2,600; one covered car marked "A. & B." numbered 25 for \$700; and ten Rack cars painted yellow and numbered 1 to 10, for \$5,500; and exchanged the G. & C. U. engine "Winnebago" and tender for the Aurora Branch engine "Whittlesey" and tender, the Aurora Branch paying an agreed difference of \$4,000."

On the night of September 27th of this year a rail was removed from the Kishwaukee Bridge, an accident involving the Express Train resulting. The Superintendent, on his own initiative offered a reward of \$500 and procured the aid of efficient officers, caught the guilty parties and convicted them of the crime.

Fifteen years elapsed from the time of first construction under the third Presidency before the Galena Road saw fit to insure its properties, and in the meanwhile the directors used every means to obtain the good will of citizens along the right of way to the end that in emergencies their aid might be sought when needed. An example of their conduct in matters such as this is found in the seventh resolution of December 1, 1852, which reads: "That, in consideration of the location of Waubansia Engine Company No. 8, near the buildings of this company and the benefit and aid that may derive from said Fire Company in the event of fires occurring in or near said buildings, the sum of \$25 be allowed said Fire Company to aid them in fitting up their Engine House, in a comfortable and useful manner." Another, of September 21, 1859, reads: "that the sum of \$100 be placed in the hands of the Chief Engineer of the Fire Department, to be by him distributed, in his discretion, among the men who so faithfully performed their duty on Carroll Street, between Clinton and Canal Streets at the fire on the night of the 15th inst., whereby a large amount of property belonging to this Company was preserved from destruction." The "Steam Fire Engine" in this case was the "Long John," named, of course, after John W. (Long John) Wentworth, a member of the Board of Directors of the Galena Road, and another of the builders of Chicago. On April 21, 1860, we find "that the Board deem it expedient to insure a portion of the buildings and other property of the Company in Chicago, and the President and Superintendent be instructed to effect such insurance as they may deem for the interest of the Company." But it was not until May 21, 1863, that a floating policy of \$20,000, on all the property on all the roads owned, leased or operated by the road, and \$5,000 on the Chicago property of the company, was purchased.

As early as May 26, 1853, the subject of safety was considered important enough to warrant "that a committee of three be appointed by the President to take into consideration the present regulations and arrangements of the Road in reference to safety and guarding against accidents, with instructions to report to the Board." October 6th of this year was the resignation of John B. Turner as Superintendent of the road, effective as soon as a successor could be procured for the post. Two months later Edward B. Talcott, Esq., was engaged for the position but declined, whereupon Mr. Turner was reinstated, remaining until October 9, 1855, when Mr. Edward Martin took over as General Superintendent.

The company was fully alive to the need of bridges over the Chicago River which would make its facilities more easily accessible to the users of the road and helped the building of such structures in at least two cases with cash, the first being the subscription of "\$300 toward

the construction of a new bridge across the river at Clarke Street," as of January 4, 1854. At the Directors' Meeting on June 7th, of the same year, "the subject of a connection with the Illinois Central Rail Road by a bridge across the Chicago River, was, on motion, referred to the Executive Committee with power to act." In November, 1855, the company subscribed "\$15,000 to the Rush Street Bridge (near the Lake House Ferry) provided the bridge does not cost more than \$35,000 and the plans have the approval of the Chief Engineer, but if the cost is less than \$35,000 the Company will pay three-sevenths of the cost."

By January 17, 1854, the board had adopted resolutions governing the dates of its meetings, and quorum or no the Secretary duly noted the call in the minute book, which caused this somewhat interesting entry: ". . . The President and four members of the board met in the Passenger Car for an Excursion over the Chicago, Dixon and Iowa Central Road of this Company, to Lane, the present terminus and back, but there being no quorum the excursion was abandoned." In August the board learning of the death of James H. Collins, a member of the Board of Directors of the Galena and Chicago Union Rail Road Company continuously from the beginning of the road, and the only one to serve for that length of time, a suitable preamble and resolutions were adopted.

The proceedings of the board throughout the history of its existence are characterized by calm deliberation and serene confidence of ability to conduct the affairs of the company in a competent manner, only one instance of ruffled tempers being found in the record. This was caused by the passage, in the General Assembly of Illinois, of an amendment which first; nullified the 38th section of "An Act to provide for a General System of Railroad Corporations" so far as it extended to or controlled the charter and franchises of the Galena and Chicago Union Rail Road Company, and second; adopted another section of the new amendment which read: "A Bell of at least thirty pounds weight, or a Steam Whistle shall be placed on each locomotive engine run by said Company, and shall be rung or whistled at the distance of at least eighty rods from the place where said road shall cross any other road or street and be kept ringing or whistling until it shall have crossed said road or street under a penalty of fifty dollars for every neglect to be paid by said corporation one-half to go to the informer and the other half to the state, and shall also be liable for all damages which shall be sustained by any person by reason of such neglect." The board resolved forthwith, on March 6, 1855, "that the said G. & C. U. R. R. Co. does hereby absolutely, to all intents and purposes, refuse to accept, accede to, or recognize the said act and will not be governed or controlled thereby," and in the next resolution approved and accepted as part and parcel of the franchises granted and governing the company "An Act to confirm the consolidation of certain Rail Road Companies therein named." This act legalized the consolidation of the Galena Road with the Mississippi and Rock River Junction Rail Road Company. The next piece of business transacted was the laying on the table a petition from the citizens

of Geneva asking that the company refuse to carry ardent spirits; and lastly on this day the board resolved "that the Southern line of the roads of this company via Dixon to Fulton be hereafter designated and known as 'The Chicago, Fulton and Iowa Line.' "

June 20, 1855, saw the beginning of a transaction which came to nothing but some trouble for both parties, and dragged out for more than eight years, when the Galena Road agreed to sell to the Wisconsin Central Rail Road Company ten miles of old strap rails at \$50 per ton on five years time at seven per cent interest payable semi-annually, amending this of the 28th to an amount sufficient to lay the track from Richmond to Geneva, Wisconsin, and lowering the rate to six per cent, requiring the Wisconsin Central to give their bond for the amount. Nothing further appears in the transaction until May 20, 1863, when the attention of the Board of Directors of the Galena Road was called to the soon to take place sale of the Wisconsin Central, whereupon the President was authorized to represent the interests of the company in the matter of recovering the rail still in the possession of the Wisconsin Central. The President, Mr. William H. Brown, reported, on June 4th, a written agreement with the agent of the bond-holders of the Wisconsin Central that the sale of the road would be on condition that the strap rail be considered as a loan and that the rail would be returned to the Galena Road, it being understood that the Wisconsin Central could retain the use of the rails until "T" rails were procured, not exceeding two years. As far as the minute book is concerned the matter ended there.

Very little material is furnished for these notes in the year 1856 as most of the transactions are routine matters, but we cannot neglect to note the petition of the legal voters of the town of "Junction," presented to the board on February 20th, which asked that the name of the community be changed to "Turner," honoring John Bice Turner, President of the road, which request was readily granted. On May 21st a notification from the committee appointed by the Railroad Companies in the matter of Ross Winan's suit for use of his eight-wheel cars states that the Galena Road's share in the cost was \$1,655.60.

1857, too, does not furnish much for us from March 19th, when the Wood Agent is ordered to report to the board regularly, possibly indicating the increasing difficulty in supplying fuel for the locomotives, until December 16th, where, in a resolution relating to old accounts we find the Auditing Committee given the duty: ". . . and also to examine and dispose of or destroy all uncurrent and counterfeit money that may be found in the cash of the Treasurer and Operating Department." This committee reported on May 25, 1859, as follows: "The counterfeit money taken by all the agents of the Company, as returned to the Treasurer during the year amounts to \$262 which has been charged to incidentals and destroyed by the Committee in accordance with the resolution of the Board. The amount of broken bank money received during the same period (a portion of which may be saved) amounts to \$382." One more transaction in this year is of interest to us. On

December 23rd a bill of \$1.75 was paid for binding a series of Annual Reports for the Historical Society, and the reports presented to the Society. Was this done at the request of W. B. Ogden, or was it Walter L. Newberry who made the suggestion? Both these men were active in the founding of the Society and served it well.

Eighteen months of the record are passed over here inasmuch as these notes make no pretense at being a complete historical record, and only regular business matters occupied the board during this period. On June 2, 1859, we find that some attempt is being made to regulate the purchases of the road in a more satisfactory manner, the Superintendent being required to cause an inventory of materials on hand and other property to be rendered him each month for the use of the Executive Committee that they may "solicit by advertisement, signed by the President of the Company in such papers in the City of Chicago or elsewhere as may seem to them judicious, sealed proposals for the supply of the same." Small purchases were to be made by individuals designated by the committee. Twenty days later the Superintendent stated "that A. Enrigh, the proprietor of the Stevens Patent Brake, had presented a claim of \$4 per mile for the use of said Brake on the Madison and Beloit Rail Road." The claim was settled July 6th for \$55, and on the same day the board employed Mr. Elliott Anthony as full time attorney for the company at a salary of \$2,000 per annum.

Evidently some rate-cutting was in progress during the latter part of 1859 for as of November 28th we read an order of the Executive Committee "That the Superintendent be authorized to reduce the Passenger fare and Freight tariff between Chicago and Rockford so much as he may deem necessary to meet the emergencies caused by the opening of the Kenosha and Rockford Road." This line intersected the line of the Chicago, St. Paul and Fond du Lac Rail Road at Harvard, Illinois, and made possible the through movement of passenger and freight traffic from Chicago to Rockford over these lines which became the Chicago and North-Western Railway Company on June 2, 1859. But notice that by June 20, 1860, that some sort of an agreement must have been reached, for on that day the following appears of record: "Resolved, that the interests of this company require a careful adherence to such rates for freight and passengers, as will at least cover the cost of carrying same, and that it is not expedient, even at competing points, to agree upon rates involving a positive loss. Should Special cases arise, requiring, in the opinion of our Superintendent, a departure from this rule, he is required to report the same to the Executive Committee for consideration. In the adjustment of rates for through traffic or travel from Lake Michigan to St. Paul, La Crosse, Prairie du Chien, McGregor, Dunleith, or any other points on the Mississippi River, open to other lines, it is expedient and proper that the lines naturally Shortest from Chicago on the Lake to those points, shall fix the tariff of prices, and that this company shall agree to the same rates as long as they are remunerative, as any reduction on our part would lead to injurious competition and provoke the combined opposition and enmity of the lines

North of us." Once more we wonder if the strong hand of W. B. Ogden is not still guiding the Galena Road. He was President of the Chicago and North-Western at this time, and it was undoubtedly he who brought about the consolidation of the North-Western and Galena Roads.

On July 4, 1860, a fire broke out in the company's woodshed at Fulton, threatening the destruction of a thousand cords of wood and adjacent buildings. The Lyons Fire Company, abandoning their celebration, brought up the engine and successfully stopped the progress of the fire. In a series of three resolutions the board acknowledge their appreciation of the disinterested services of the fire company and expressed thanks for valuable labors in the Galena Road's behalf, continuing with an appropriation of not more than two hundred dollars, "sufficient for the purchase of 220 feet of hose, with the necessary couplings, . . . to be expended for this purpose, and the balance of said sum to be paid to said Fire Company in Cash under the direction of the General Superintendent." The thanks of the company were extended to the citizens of Fulton for their valuable aid on that occasion, and in the warm glow of satisfaction at having thus acknowledged their debt to all parties, the board agreed to help the construction of a free bridge at Dixon by ordering the transportation of the necessary lumber without charge.

It is not generally known that a branch to Naperville, Illinois, was seriously considered at this time, a survey being made when the citizens of that town paid the greater portion of the cost, the Superintendent reporting to the board a probable cost of \$60,000 for the construction. For two or three years previous to this the Chicago, Burlington and Quincy and the Galena Road had experienced some difficulty in getting together on terms agreeable to both in the matter of the former using the latter's track and facilities, in the later stages of which the "Q," trying to buy a part of the right of way and track from Turner to Chicago but meeting with a refusal, determined to build their own line from Aurora to Chicago which effectively stopped all consideration of the Naperville Branch Rail Road.

Early in 1863 the Secretary called the attention of the board to the fact that complaints were made by the stockholders in regard to the quality and appearance of the stock certificates used by the company, and suggested that an engraved or lithographed certificate, on better paper, be adopted. The board, after due consideration of this manifestation of pride in ownership, referred the matter to the Executive Committee with power to act. We read nothing further on this subject.

A letter dated October 31, 1862, from W. L. Newberry, President of the Chicago Historical Society, asking for aid in the establishment of a general Rail Road Library, was taken from the table on February 25, 1863, and the President (of the Galena Road) authorized to appropriate, for the purposes indicated, a sum not exceeding \$200. Newberry was president of both organizations at this time.

The matter of the Pacific Rail Road stirred the directors to order the Superintendent to survey "west from the Missouri River to the Valley of the Platte, at or near its most northern bend, to ascertain the

most practieable route for a Rail Road" if the Cedar Rapids and Missouri River road would survey from the Missouri River to Boonesboro. Mr. William H. Ferry, Acting Director, was sent to New York to inquire into the advisability of purchasing stock in the Pacific Rail Road, to the amount of 20,000 shares, in his own name, in which matter he reported that Mr. Durant, of the Chicago and Rock Island Rail Road, had control of a majority of the stock; that the terminus would probably be on the North Bank of the Platte River; and that as the company were relatively secure in their relationship with the new road, having two friendly members on the board, that he had not deemed it necessary to subscribe to the stock. In view of the arrangement between the Union Pacific and the North-Western today Mr. Ferry apparently drew his early conclusions correctly.

October 10, 1863, saw the President "authorized to purchase the two or three locomotives of Rogers, Ketchum and Grosvenor," and on the next day he is authorized to purchase ten locomotives. A further authorization empowered him to "appropriate a sum not exceeding \$3,000 for the purchase of corn to aid in drawing Stock and Hogs in Western Iowa to the lines of the Company."

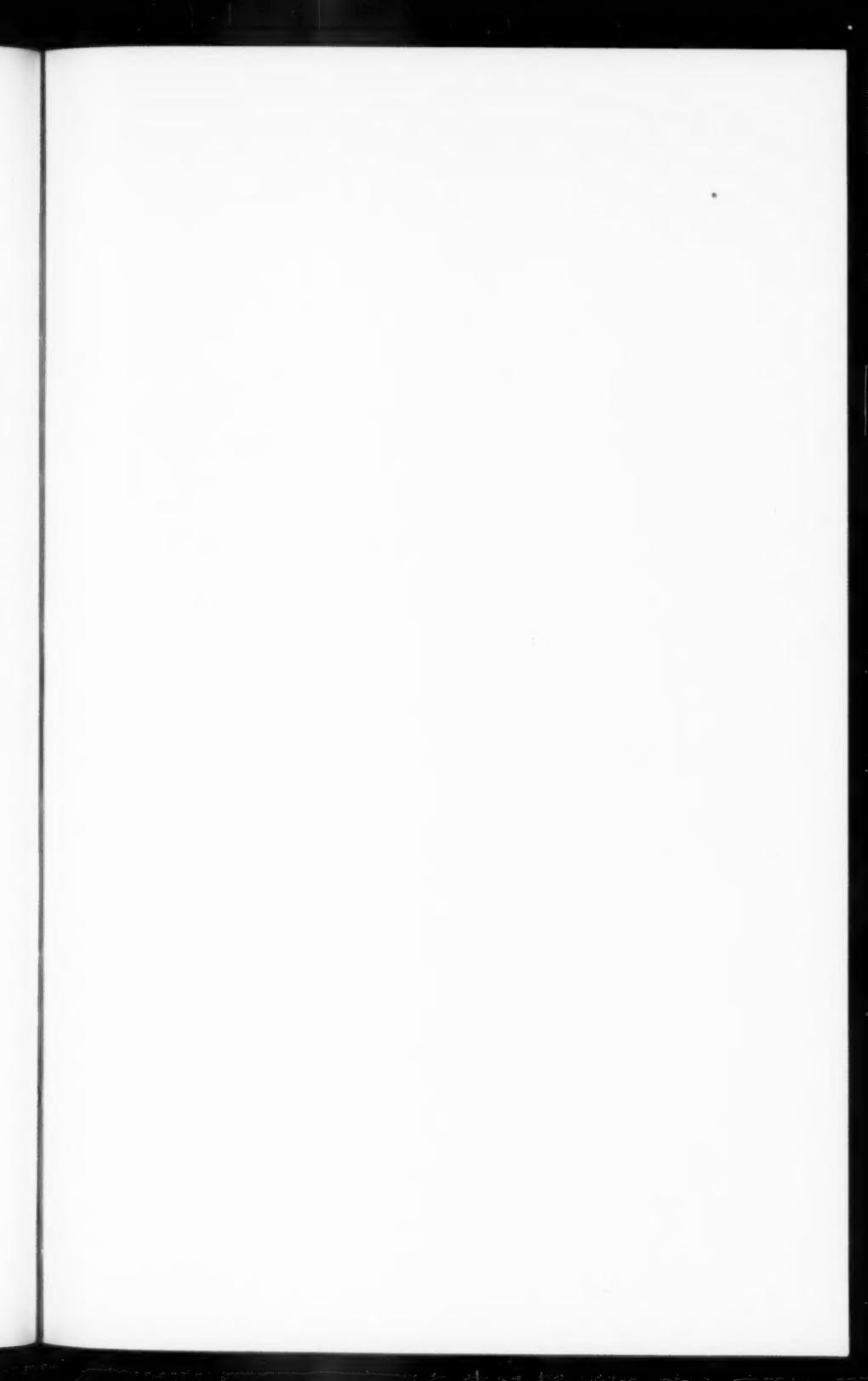
In addition to the "Q" the Galena Road had another tenant in Chicago, The Chicago and Milwaukee Rail Road, which later became a part of the North-Western. The first reference we find in this connection is on April 17, 1861, when the road asks an extension of its lease on the Freight House on the West Side for one year and 20 or 25 feet more of the Freight Room in the Building. It also asked to run its Waukegan Accomodation into the Passenger Depot on Wells Street. The next reference to this tenancy is of record on May 18, 1864, when another extension of the lease on that portion of the Freight House and the Wells Street Station was desired and agreed to for one year by the Galena Road.

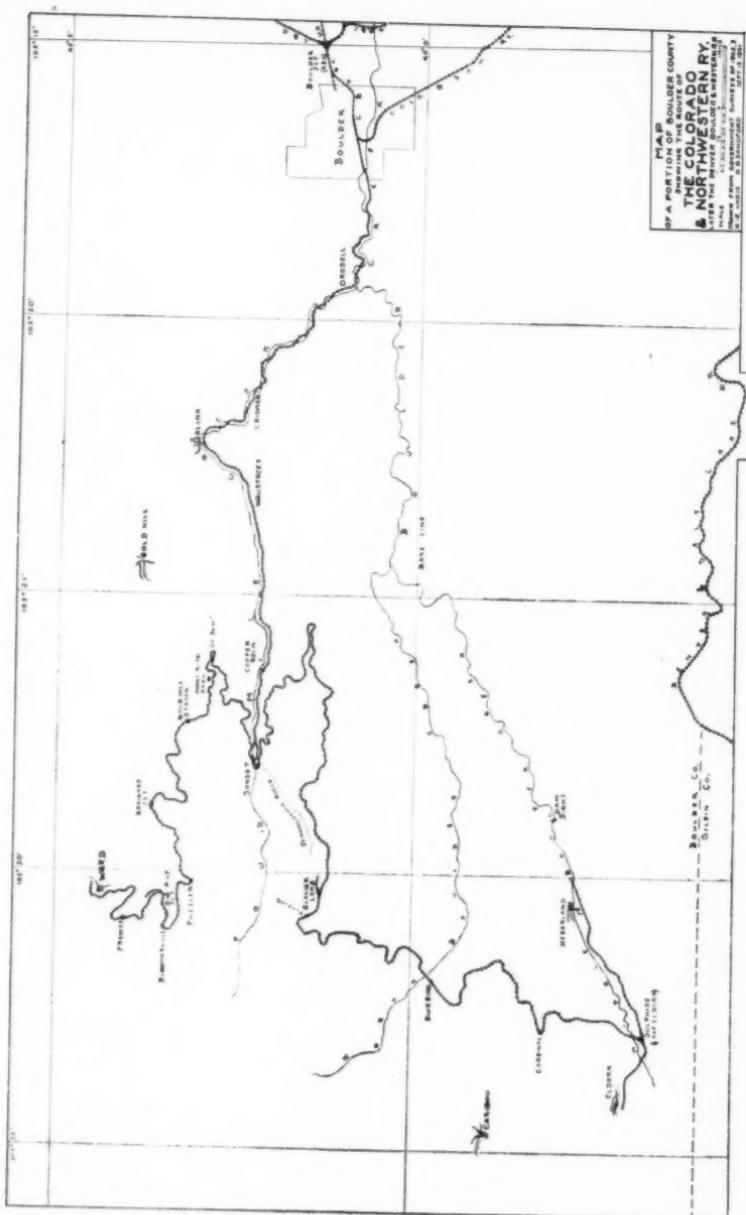
Now we approach the last days of the Galena and Chicago Union Rail Road Company. At the stockholders' meeting of June 1, 1864, Mr. W. B. Ogden (a proxy-holder) offered a resolution rescinding the one adopted by the stockholders as of June 2, 1858, which dealt with the policy of the company in the matter of leases, loans, etc., to other Rail Roads, setting forth that no leases, commissions, or "draw-backs" would be granted for more than three years; no contract to lend money or credit was to exceed \$20,000; or that no branch or extension would be made, all these provisions needing the approval of a majority of the stockholders at any annual meeting, or a special meeting called on sixty days notice, or a majority approval by the stockholders by letter. This motion was adopted without dissent, whereupon the stockholders proceeded to elect five directors from New York, seven from Chicago, and one from Rockford. At a special meeting of the directors, immediately following the stockholders' meeting, John B. Turner was unanimously elected to the Presidency. An agreement for a consolidation between the Chicago and North-Western Railway Company and the Galena and Chicago Union Rail Road Company was submitted and approved, and

the President and Secretary authorized to execute same, by the stockholders at their meeting, and subsequently by the board, 33,847 shares, representing a majority of the whole number, being voted in favor of the agreement.

It may be worth while to place before you the final passing of Chicago's first railroad which took place at a stockholders' and board meeting of June 3, 1864. In the stockholders' meeting the articles of agreement and consolidation, signed by the President and Secretary, were authorized to be delivered. At the board meeting "The President reported to the Board that, in pursuance of the directions of the Board of Directors and the approval of the stockholders, given on the first day of June, instant, he had signed and executed the articles of agreement and consolidation of this Company with the Chicago and North-Western Railway Company, and had caused the same to be signed by the Secretary of this Company, and the Corporate Seal of this Company to be thereunto affixed; and that the said articles are ready for delivery." Whereupon, on motion of Mr. Coventry, it was "Resolved, That the action of the President is hereby approved and confirmed, and he is requested to deliver the said Articles of Agreement and Consolidation to the Chicago and North-Western Railway Company; and that the same be by him delivered at 4 o'clock P. M. of this day." W. B. Ogden appeared and took his seat. The Board then, on motion, adjourned, *Sine Die*.

Mr. Larrabee underscored the last two words heavily and his attestation is in his usual business-like form, but at the bottom of the page, in pencilled letters so faint as to be scarcely discernible, stands the following in his never-changing script—"Exeunt, G. & C. U. R. R. Co. Directors."





Map of the Colorado & Northwestern Ry.

—Courtesy of Dr. H. Sandford.

History of the Denver, Boulder & Western Railroad Co.

By M. C. Poor

To compile a fairly complete history of The Denver Boulder & Western R. R., we must go back and take up briefly, the old Greeley, Salt Lake & Pacific R. R. Co. This road was organized, constructed and operated by The Union Pacific Ry. for their interests. It was chartered in the State of Colorado, January 17th, 1881. Original plans called for the construction of a main line of road from Greeley to Ft. Collins and up the Cache la Poudre River, thence in a westerly direction towards Salt Lake City. These plans also called for the construction of a branch line south from Ft. Collins to Denver. In the latter part of 1881 and early 1882, the company constructed a line of standard gauge railroad between Greeley and Stout, Colorado, via Ft. Collins, a distance of 39.8 miles. The line was opened for business sometime in July 1882. Connection with the Union Pacific system was made at Greeley. During this time the Union Pacific also built a line of narrow gauge railroad west from Boulder, Colorado, 14.43 miles. Construction started in July, 1881 and the line was completed and placed in operation October 1st, 1883. This piece of narrow gauge line was the birth of our Denver Boulder & Western R. R.

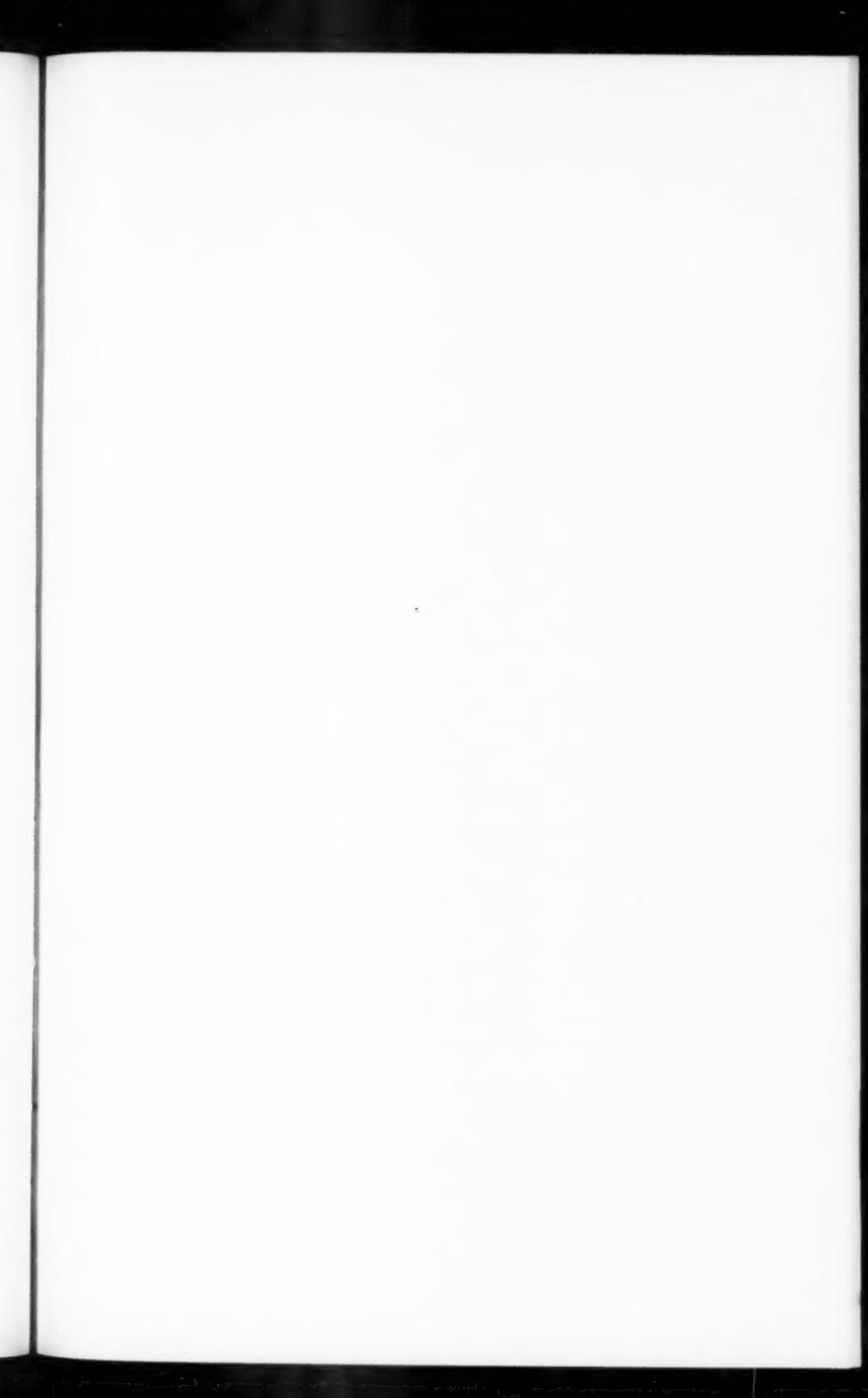
The line followed Boulder Creek for about 3 miles to the junction of Four Mile Creek, thence up Four Mile Creek to the vicinity of what was known as Pennsylvania Gulch. In this vicinity, near the junction of Pennsylvania Gulch and Four Mile Canon, the little town of Sunset was located.

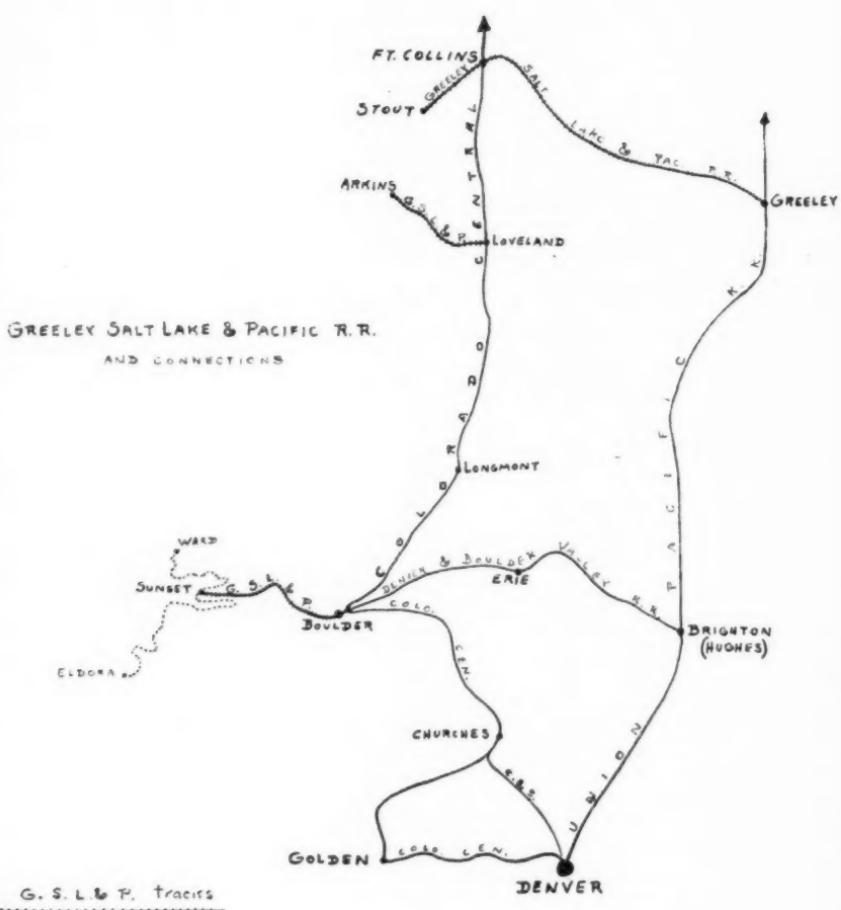
In order to convey to the reader, the tremendous amount of bridge and trestle construction the Union Pacific built in this 15 miles of line between Boulder and Sunset, we find the following figures as disclosed by some old Union Pacific records. Between these two points there was constructed, by the Union Pacific engineers, a total of 66 bridges and trestles of various lengths, which altogether totaled 3,885 feet. Each varied from 12 to 230 feet in length, and from 3 to 20 feet in height. Of these 66 structures, some were constructed of wood and some of iron. Between Boulder and the junction of Four Mile Creek and Boulder Creek, a distance of 2.6 miles, the tracks crossed Boulder Creek 6 times, while between the junction of these two streams, and Sunset, a distance of 10.5 miles, the tracks crossed Four Mile Creek 45 times. One of the most congested sections occurred just west of Oredell between mile posts 3 and 4, where there were fourteen 48 foot and one 16 foot trestles. Of these 15 trestles, 12 were over Four Mile Creek, and the other 3 were over miscellaneous gulches. The following break-down reveals the number and length of these 66 structures.

- 1 — 12 feet long.
- 10 — 16 feet long.
- 34 — 48 feet long.
- 5 — 55 feet long.
- 1 — 56 feet long.
- 4 — 64 feet long.
- 3 — 80 feet long.
- 3 — 96 feet long.
- 1 — 128 feet long, near mile post 10.
- 2 — 160 feet long, near mile posts 3 and 9.
- 1 — 230 feet long, one-half mile west of Boulder.
- 1 — 288 feet long, near mile post 4.

The following interesting information regarding some buildings and other structures along the original line, shortly after the road was completed through to Sunset, also was found in these old Union Pacific records. At Crisman was located a 22x26, one and one-half story log section house. Shortly afterwards a 12x26 frame addition was built. The first floor contained six small rooms while the loft contained three rooms. Close by were three small frame tenement houses. It is the author's guess that some "King Snipe," section foreman to you, and a few of the local section crew and their families lived here. There was also a 10,150 gallon capacity wood water tank at Crisman. These records also disclosed the fact that there was a one story, 20x48 foot combination depot and freight house of frame construction, at Sunset. This building contained a 12x19 waiting room, a 9x15 office, a 7x9 bed room (for the Agent?), and a 19x25 freight room with a freight platform containing 1,920 square feet.

The purpose of this road was to contact a few scattering mines located between Boulder and the end-of-track. Connection with the Union Pacific system was made through either of two Union Pacific controlled roads: The Denver & Boulder Valley Railroad, originally known as the Boulder Valley R. R., which ran from Boulder east to the main line of the Union Pacific at Hughes (later known as Brighton), or the standard gauge Colorado Central R. R. via Golden into Denver where connections with the Union Pacific were made. The standard gauge division of The Greeley Salt Lake & Pacific R. R. also included an 8.2 mile line constructed in 1886-87 between Loveland and Arkins. This short branch connected with the Greeley-Stout section through the standard gauge Colorado Central line that ran north out of Denver through Golden, Boulder, Loveland and Ft. Collins toward the Wyoming State Line. All rolling stock on both the standard and narrow gauge divisions was furnished by The Colorado Central R. R. All lines of the Greeley Salt Lake & Pacific R. R. remained in operation under that name, until they were taken over as a part of The Union Pacific Denver & Gulf Ry. consolidation which took place on April 30th, 1890. (See full details in history of The Denver South Park & Pacific R. R.) Eventually the standard gauge division became a part of the present day





DENVER BOULDER & WESTERN R.R. "HISTORY".

Greeley, Salt Lake & Pacific R.R. and connections.

Colorado & Southern Ry. We also might add before leaving the standard gauge section, that that part of the line between Ft. Collins and Stout was gradually abandoned over a period of time between 1890 and 1908. (Thus ends the history of the standard gauge division. The balance of this paper will deal only with the narrow gauge line between Boulder and Sunset, or the history of The Denver Boulder & Western R. R.)

Not much information has come to light as to how much business the Union Pacific derived from this particular branch. However, in 1894, history tells us that a severe flood in Four Mile Creek and Boulder Creek washed out and destroyed 12.59 miles of the 15 miles of track between Boulder and Sunset. Evidently business was not so good, for the Union Pacific did not think it worthwhile to rebuild the line, and this 12.59 miles was abandoned. In fact the road must have been in a more or less abandoned state for a number of years, for the Union Pacific annual report for the year ending December 31st, 1889, states that this branch of their system was considered as absolutely useless.

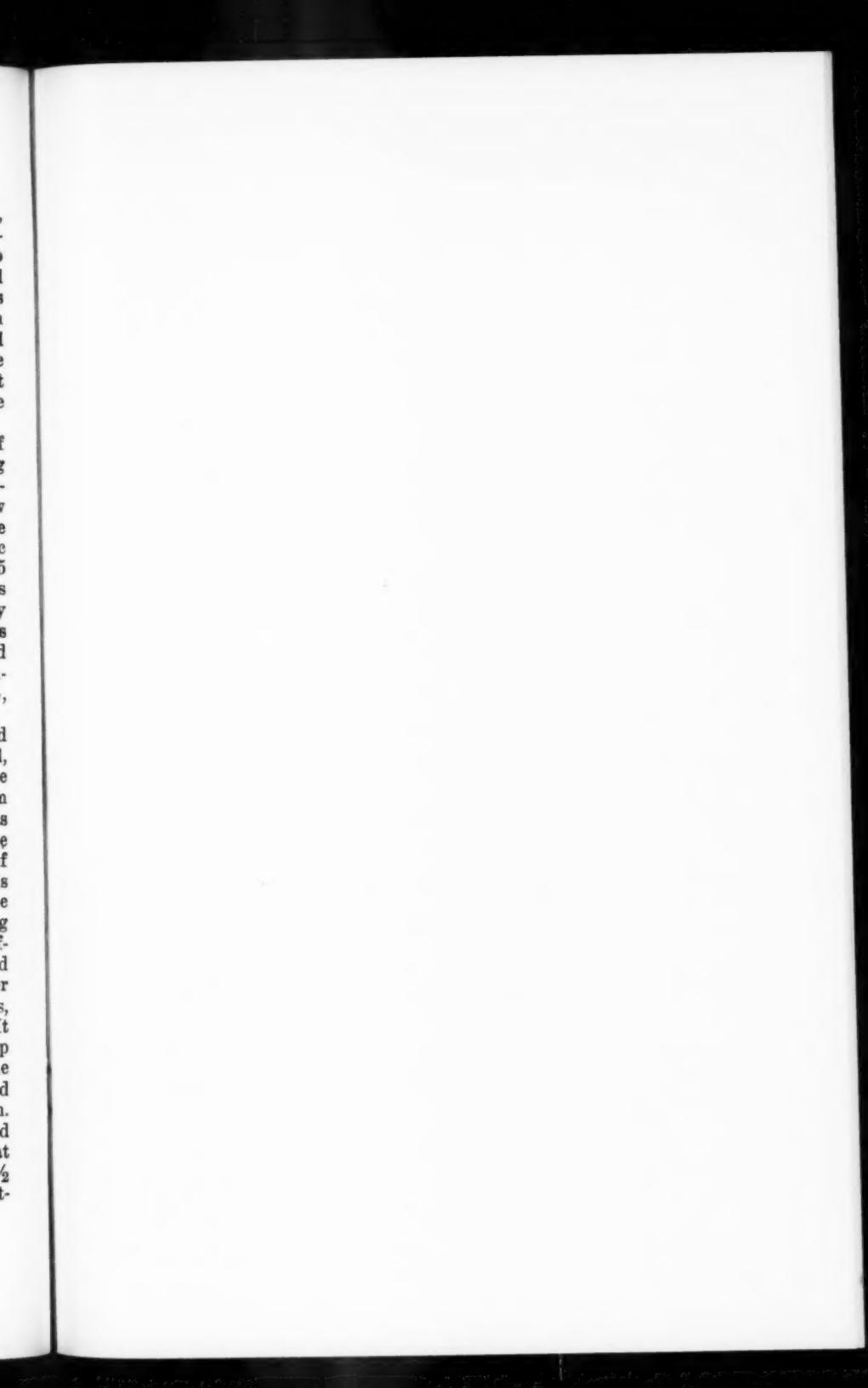
After the 1894 flood, nothing more is heard of the Pennsylvania Gulch branch until in the early part of 1895, when a new company known as The Intermountain Ry. Co. was organized. This road was incorporated on April 8th, 1895, and was capitalized for \$300,000.00. The incorporators, as disclosed by the original papers, were Samuel C. Brown, Jacob S. Switzer, James Cowie, Eugene A. Austin and Geo. F. Fonda. These men were also the directors of the road during the first year of its existence. At this time the mining industry in the vicinity of Ward was beginning to pick up and some of the larger mines such as the Big-Five, The Utica, The Ni-Wot and others were developing their properties quite rapidly. The original plans called for the construction of a 22 inch gauge tramway from Boulder to Ward by way of Sunset and other such convenient mining camps as might be selected. Plans were also included to build a line of railroad between Boulder and Denver should future business merit such an extension of the line. Although the incorporation papers included plans to haul both passengers and freight, the principal object in building the road was to haul ore from the mines to a mill near Owen's Lake, 4 miles east of Boulder. Early plans called for the shipment of 1000 tons of ore per day. This 22 inch gauge line was surveyed from Boulder to Ward via Sunset by Mr. J. L. Frankeberger who afterwards became Chief Engineer for The Denver Boulder & Western R. R. Frankeberger's line of survey more or less followed the original route of the old Union Pacific roadbed as far as Sunset. Other than this Survey, no actual construction work was ever done by The Intermountain Ry. Co.

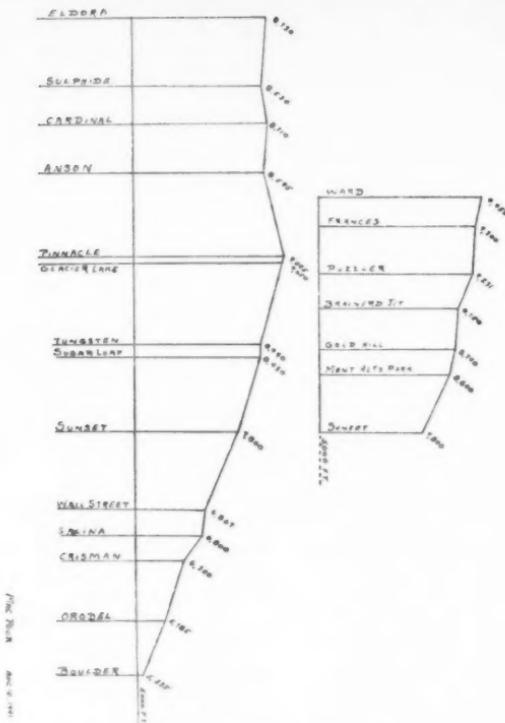
In the meantime some Pennsylvania capitalists headed by Wm. C. Culbertson, Chas. B. Culbertson, and J. T. Blair appeared on the scene and became interested in the mining prospects in this area, and The Intermountain Railway Company. As a result of these interests, a new company known as The Colorado & North Western Railway Company was organized by these men. Accordingly, the Colorado & North West-

ern Ry. Company was chartered in the state of Colorado on July 22nd, 1897, and purchased the rights, privileges and franchises of The Intermountain Railway Company. The purpose of this new company was to build and operate a line of railroad between Boulder, Sunset, Ward and points west. After careful consideration and thought, the new owners decided that the gauge should be changed from the original 22 inch to a three-foot gauge road. They took over the more or less abandoned Union Pacific line between Boulder and Sunset, and the projected line between Sunset and Ward and plans were started immediately to get the right-of-way and track in operating condition and to continue the road on northwest of Sunset to Ward.

The Surveying and Engineering work were under the direction of Mr. F. R. Dungan, who later became a professor of Civil Engineering at The University of Colorado. Recalling the flood of 1894 and its results, the old Union Pacific roadbed was partly abandoned and a new line was surveyed between Boulder and Sunset which placed most of the track on higher ground. The maximum grade on the old Union Pacific (G. S. L. & P.) roadbed was 4.39%, with curves running as high as 25 and 30 degrees. Just how closely Dungan followed Frankeberger's survey is not known, however, a good comparison between the two may be ascertained from a study of the map. As previously stated, there was a total of 51 bridges and trestles on the old line between Boulder and Sunset, while on the new line there were only 17. On the newly constructed line, the grades varied from 3.78% to a maximum of 4.49%, while the maximum curvature was 30 degrees.

By January 15th, 1898, the line as far as Sunset was completed and put into operation, and all grading over the mountain to Ward, following the original Frankeberger survey was completed. By June 30th, 1898, all rail was laid up to Ward and the complete line from Boulder to Ward was opened to business July 1st, 1898. Some idea as to what type of construction difficulties were encountered on this line may be ascertained when it is noted that the road climbed a distance of 4,115 feet in the 27 miles it traveled between Boulder and Ward. This meant that the average grade up to Ward was a bit over 3%. The maximum was a 4.49% grade located just below Salina. In running this line the surveyors and engineers were confronted with many difficult problems of railroad construction, in their effort to lay a roadbed with a minimum per-cent of climb. The route west from Boulder through the narrow and deep canons of Boulder and Four Mile Creeks, and up the mountain from Sunset to Ward was a tortuous one. It called for a great number of fills, bridges and trestles, and many sharp curves. Some of these curves reached a maximum of 30 degrees. One of the largest fills on the line was at a point called "Ox Bow," located just down-grade from Mont Alto Park at the head of Potato Gulch. Still another idea as to what winding and turning the little road had to do between Boulder and Ward may be had, when it is noted that the air-line distance between these two points is approximately 12½ miles as compared to the rail distance of 27.1 miles. Another interest-





Profile Map of Denver, Boulder & Western R. R.

ROCKY MOUNTAIN OFFICIAL RAILWAY GUIDE.

73

Union Pacific Railway.

October 1893

Denver and Morrison.

	No. 21	No. 23	Mis	STATIONS.	No. 22		No. 24	
8 45AM		6 00PM	0	Lv.....Denver.....Ar	8 00AM		3 40PM	
		6 25	8Sheridan Junc.....	7 35			
9 45		6 30	9	Fort Logan.....	7 30		2 45	
10 35AM		7 05PM	17	Ar.....Morrison.....Lv	6 55AM		2 00PM	

Cheyenne to Julesburg.

8	2	Mis	STATIONS.	1	7
4 25PM	3 45AM	0	Lv.....Cheyenne.....	Ar	5 35AM
5 20		32Erbert.....		11 40AM
7 45	6 20	102Sidney.....		10 24
8 50PM	7 30AM	144	Ar.....Julesburg.....		8 10

WEST **Boulder Canon Branch.**

357	355	Mixed	M's	STATIONS.	356	358
Mixed					Mixed	
7 40AM		0	Lv.....Denver.....Ar	6 15PM		
11 25		29	Ar.....Boulder.....Ar	1 45PM		
2 30PM	9 00AM	25	Lv.....Ordel.....Ar	12 45AM	5 45	
2 50	9 20	32		12 30	5 28	2 00PM
3 18	9 48	32		12 05	5 05	2 10
3 30	10 00	25		Gold Hill.....	11 55	3 15
3 45	10 12	36		11 45	4 45	4 05
4 03	10 32	38		Sugar Loaf.....	11 27	4 27
4 15PM	10 45AM	42	Ar.....Copper Rock.....	11 15AM	4 15PM	5 30

WEST **Fairplay Branch.**

475	Mixed	M's	STATIONS.	476	Mixed
8 30AM			Lv.....Denver.....Ar		

—Collection of M. C. Poor.

Copied from "Rocky Mt. Official Ry. Guide"—Oct. 1893.

ing feature of the little pike was the fact that there were no tunnels throughout the whole line. This was very odd, especially when one considers the fact that the line was purely a mountain railroad.

During the early history of the road, a number of spurs or short branches to reach various mining properties along the line, were projected. These included a two mile extension out of Ward known as the Gold Lake or New Market extension, a $\frac{1}{2}$ mile mine spur near Frances, a 1 mile mine spur at Big-Five Junction, and a $2\frac{1}{2}$ mile mine spur at Brainerd Junction. Certain advertising put out by the road, including their published timetables in the early Official Guides, would lead one to think that these spurs etc., were actually built. However, this information is thought to have been erroneous. The only branch trackage constructed, was the $\frac{1}{2}$ mile spur off the main line between Big-Five and Frances. This was built in 1899, and connected with one of the mines of The Big-Five Mining Co. It has also been fairly well determined that the extension of the line at Ward towards New Market was completed prior to 1906. Other than these two pieces of trackage, it has not been definitely established as to whether the balance of these projected spurs were ever built or not.

If the reader will refer to the map he will note a station called Salina, or the "Old Gold Hill Station." This station, known earlier as Gold Hill, was originally located at a point $7\frac{1}{2}$ miles west of Boulder and served as a stop for the town of Gold Hill proper, which was located some 3 miles northwest from the station. Originally when the Greeley Salt Lake & Pacific built to Sunset, they called stop near a small and unimportant settlement known as Salina, "Gold Hill." This was probably because Gold Hill was of greater importance than Salina, even though it was located some 3 miles northwest. When the road was washed out and abandoned in 1894 this station or stop known as Gold Hill, ceased to exist because the locality was already known as Salina. Then when the Colorado & North Western rebuilt the line in 1897, this stop was given the name Salina, and served the town of Gold Hill proper for a year or so until the Sunset-Ward line was built and a new stop known as Gold Hill station, which was closer and more easily accessible, was established some $4\frac{1}{2}$ miles beyond Sunset to serve the town of Gold Hill.

By this time, 1900, The Colorado & North Western Ry. had in operation 13.3 miles of line between Boulder and Sunset, 12.8 miles of line between Sunset and Ward and the $\frac{1}{2}$ mile mine spur near Frances, making a total of 26.6 miles of narrow gauge 3 foot railroad in operation. The total investment in the railroad and rolling stock at this time was \$1,183,318.00. In the meantime the financial side of the story does not sound so good. Deficits that ran from approximately \$600.00 to \$38,000.00 per year began to pile up, with the result that The Colorado & North Western Ry. Co. went into receivership and was re-organized as The Colorado & North Western R. R. Co. This new company was chartered on May 11th, 1904, and on June 28th following, took over the rights, privileges, and franchises of the old organization.

When the newly organized "Colorado & North Western R. R. Co." took over, the following report was published, as of June 28, 1904:

W. C. Culbertson, Girard, Pa.	President
S. B. Dick, Meadville, Pa.	Vice-President
Frank May, Girard, Pa.	Secretary
H. D. Milton, Boulder, Colo.	Treasurer and General Manager
Capital: \$500,000.00—\$500.00 cash.	\$499,500.00 by purchase of property. Indebtedness \$27,439.36.
Main line 26.5 miles. Value.....	\$26,500.00
Spurs & sidings 2.39 miles. Value.....	717.00
<hr/>	
Total 28.89 miles.	\$27,217.00
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5 locomotives and tenders	\$ 6,250.00
9 coaches	1,800.00
4 observation coaches	600.00
2 combination cars	300.00
29 box, 35 gondola, 4 flat cars	5,900.00
30 dump, 2 caboose	2,600.00
<hr/>	
	\$17,450.00
<hr/>	
Real estate	\$ 540.00
Buildings	610.00
<hr/>	
	\$ 1,150.00

Back in 1881-82 when the Union Pacific had constructed this narrow gauge line out to Sunset in Pennsylvania Gulch, they had plans of continuing the road on toward Glacier Lake and points west. With this in view, the Union Pacific had actually graded a portion of the road bed in that direction. It is not known how far they went, however it must have been to the vicinity of Sugar Loaf. After abandonment of the Pennsylvania Gulch branch by the Union Pacific, (as previously stated), this grading was used as a wagon road by the miners in that locality. After the newly organized Colorado & North Western R. R. had taken over control, as explained in the previous paragraph, they decided to build the Glacier Lake branch as far as Eldora. Accordingly, in 1904, construction of the Sunset-Eldora line was commenced, using the old wagon road for a right-of-way as the Union Pacific had originally planned. The line was completed through to Eldora by December of that year, being opened for business on January 1st, 1905. At this point it is curious to note that once more the old road bed has reverted back to a wagon road again, and can be negotiated by a car from Glacier Lake to Sunset. There are some tight squeezes, though.

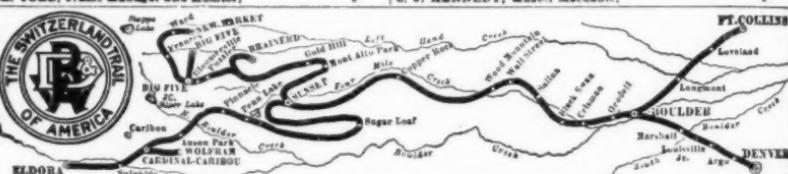
The Eldora Branch was 22.6 miles long. Certain spurs were supposed to have been built along this particular branch also, but no authentic record of their construction has ever been brought to light.

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DENVER, BOULDER & WESTERN RAILROAD.

W. E. HAYES, President and Treasurer,
L. F. FORD, Traffic Manager and Auditor,

O. M. WILLIAMS, Secretary and Superintendent, Boulder, Colo.
C. J. KENNEDY, Master Mechanic,



No. 7	No. 35	Mile	June 19, 1910.	No. 8	No. 36	No. 35-5 Miles	June 19, 1910.	Eva. No. 8-38
8:30 A.M.	Leave	Arrive	5:30 to 30 A.M.	8:00 P.M.		8:05 A.M.	Leave	5:30 8:00 P.M.
5:15 A.M.	Leave	Arrive		8:26 P.M.		5:15 A.M.	Leave	8:26 P.M.
6:20 A.M.	Leave	Arrive		7:15 P.M.		6:20 A.M.	Leave	7:15 P.M.
7:30 P.M.	Leave	Arrive	9:25 A.M.	4:35 P.M.	7:30 P.M.	7:30 A.M.	Leave	4:35 P.M.
8:45	8:45	9:00	10:05	6:00	8:45 P.M.	8:45	Leave	6:00 P.M.
2:15	10:05	6:55	10:05	6:55	2:15 P.M.	2:15	Leave	6:55 P.M.
2:15	10:24	7:55+	10:24	7:55+	2:15 P.M.	2:15	Leave	7:55 P.M.
2:45	10:24	9:00	Wall Street	7:100	2:45 P.M.	2:45	Leave	9:00 P.M.
3:45	10:45	13:30	10:45	13:30	3:45 P.M.	3:45	Leave	13:30 P.M.
3:55	10:45	13:30	10:45	13:30	3:55 P.M.	3:55	Leave	13:30 P.M.
3:55	11:10	17:8	Sunset	7:00	3:55 P.M.	3:55	Leave	17:8 P.M.
3:55	11:10	17:8	Sugar Leaf	6:40	3:55 P.M.	3:55	Leave	17:8 P.M.
6:47	11:12	17:9	Tungsten	6:40	7:39	6:47	Leave	17:9 P.M.
6:51	11:33	20:4	Glacier Lake	0:50	7:14	6:51	Leave	20:4 P.M.
6:51	11:33	20:4	Miner	0:50	2:10	6:51	Leave	20:4 P.M.
6:57	11:44 A.M.	20:5	Cardinal	6:25	13 A.M.	6:57	Leave	20:5 P.M.
			Nederland	35:3				
5:55 P.M.	12:24 N.M.	35:7	Big Five	8:25	6:22 A.M.	5:55	Leave	6:22 A.M.
			Big Five	8:25	6:22 A.M.	5:55	Leave	6:22 A.M.
			Power Camp	8:50	6:22 A.M.	5:55	Leave	6:22 A.M.
5:55 P.M.	12:24 N.M.	35:7	Lake Eldora	8:200	6:17 A.M.	2:02 P.M.	Leave	6:17 A.M.
5:55 P.M.	12:24 N.M.	35:9	Eldora	8:200	6:15 A.M.	2:00 P.M.	Arrive	6:15 A.M.
				Leave				

*Daily; § Sunday only. + Coupon stations; § Telegraph stations.

Direct Connections.—At Boulder—With Colorado & Southern Ry. and Union Pacific R.R., for all points North, East, South and West. Solid Through Trains between Denver and all Denver, Boulder & Western points.

Stage Connections.—Stage lines operate daily between Salina and Gold Hill (½ miles), and daily between Cardinal and Nederland (½ miles).

—Collection of M. C. Poor.

D. B. & W. time table in July 1910 Official Guide.

With the Eldora branch completed, the railroad had the following lines and spurs in operation:

Boulder to Sunset	13.3 miles
Sunset to Ward	12.8 miles
Gold Lake or New Market extension	2.0 miles
Mine spur at Frances5 miles

	28.6 miles
Sunset to Eldora	22.6 miles

	51.2 miles

All the main line was laid with 56 lb. rail. The roundhouse, shops and general offices were located at Boulder. It is also interesting to note that there were no turntables on this railroad. All turns were made at wyes located at various points along the line.

The route was an exceptionally scenic one and was truly called "The Switzerland Trail of America." Considerable advertising was put out in an effort to draw upon the summer tourist business, and many people it seems were taking advantage of the low excursion rates offered. Stage lines that operated out from the various stations to scenic points in the miscellaneous parks, especially out of Ward, were doing a good business. Freight traffic in the mining industry picked up a bit and was holding its own fairly well. In fact, the little pike was doing a greater volume in dollars and cents in the freight department than it was in the passenger department. For the year ending June 30th, 1905, 42,171 paying passengers were carried with a gross profit of \$23,216.00, along with 25,835 tons of revenue freight moved with a gross profit of \$31,680.00. However, operating expenses, taxes, and interest on bonds were eating heavily into these gross profits, and when the fiscal year came to an end on June 30th, 1905, the profit and loss sheet disclosed the fact that the road had dipped into the red ink bottle to the tune of a \$32,897.00 loss that year.

In view of their continually growing passenger and freight traffic, the owners began to figure that perhaps they could get the road on its feet and improve the financial situation, if they had some sort of traffic arrangements between Boulder and Denver. A study of the map will show that Boulder is located on the main line of the Colorado & Southern Ry. running northwest out of Denver up to Loveland and Ft. Collins. The C. & S. main line between Denver and Boulder constitutes part of the old standard gauge Colorado Central and the old Denver Marshall & Boulder roads. As far as the Colorado & North Western was concerned, this was a bottle neck through which practically all of the little road's passenger and freight traffic flowed. Heretofore, traffic, regardless of its direction, had to be transferred at Boulder from the narrow gauge cars to the standard gauge cars or vice-versa. A traffic agreement had been signed back in August 1903 covering this inter-change of business between the two roads. This was all well and

good as far as it went, but the officials figured that if they expected to build up traffic to the point where it would be a paying proposition, something besides a mere exchange of business between the two roads would have to be figured out. This physical transfer of passengers and freight at Boulder was a stone in their path. Accordingly the officials of the two roads got together again and an agreement was reached, whereby the Colorado & Southern would construct a 3rd rail between Denver and Boulder on their Ft. Collins line. This agreement, called an operating agreement, between the two roads was signed May 1st, 1905. Briefly, it was as follows:

"No through individual Colorado & North Western narrow gauge trains would be operated between Denver and Boulder, and no Colorado & North Western engines would pull any trains between these two points. In view of this the Colorado & Southern developed a special coupler so that the narrow gauge equipment could be handled by a standard gauge Colorado & Southern engine in a regular standard gauge train."

Thus the two agreements between the two roads included first: an operating agreement whereby The Colorado & Southern would haul the narrow gauge Colorado & North Western rolling stock on their 3rd rail line between Denver and Boulder, and second, a traffic agreement for the exchange of business.

Construction started immediately and the complete job was finished that year at a cost of \$83,924.66 to the Colorado & Southern. This included all rail, miscellaneous construction necessary to such a project, including a considerable quantity of new track ballast. The route of this 3rd rail line from Denver followed through Argo-Utah Junction, Harris, Anstee's, Semper, Broomfield, Louisville Junction (now Coalton), Louisville, Goodview, Boulder Junction, Boulder and thence to Colorado & North Western connection at mile post 30. The total distance of this route, which was and is still known as the "Louisville Cut-off," was 30 miles. The Colorado & Southern had three narrow gauge sleepers in operation over this line at one time. Later on when this line and service was discontinued, the three sleepers were converted to chair cars and returned to the old South Park where they were used.

The completion of the 3rd rail project in connection with the new operating agreement enabled both passenger and freight traffic originating either in Denver or along the line of The Colorado & North Western, to be transported to the desired destination without change of cars. The annual reports for the few years immediately following this new set-up, showed a nice increase in both passenger and freight traffic, however, there is an old saying "that all is not gold that glitters." Such was the case of our little road. It seems that it was just not in the cards for the Colorado & North Western to end up on the black ink side of the ledger. The passenger business continued to hold up just so-so, but the freight traffic was doomed. One of the principal reasons for the decrease in this traffic, and incidentally, the final failure of the

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Sunset, Colorado, looking east, 1906. Track on left to Ward, to the right to Glacier lake and one in center to Boulder.

—A McClure Photo.

road, was the fact that the Big-Five and other large mines along the Ward line ran out of ore and were gradually forced to shut down. Most of the smaller mines soon followed suit, and it was not long before the ore traffic between Ward and Boulder was a thing of the past. The deficits continued to pile up and finally The Colorado & North Western R. R. Co. went into receivership on June 11th, 1907. The little road was once again re-organized, and on March 29th, 1909, it emerged as The Denver Boulder & Western R. R. Co.

About this time a bright spot appeared on the horizon and it looked as if The Denver Boulder & Western would be allowed to have a taste of financial success. Turn to the D. B. & W. map and note that section of territory just east of Eldora. About 1909 the Public Service Co. of Colorado, a subsidiary of The Cities Service Corporation, surveyed a site for a hydro-electric power dam to be located on Middle Boulder Creek near a point known as Nederland. The project was known as "The Barker Dam." The Power House proper, was located on down Boulder Creek near the junction with Four Mile Creek.

Such a construction job as this would naturally call for the transportation of a great amount of materials, and who would fit into the picture any better than the D. B. & W.? Accordingly the power company constructed a spur some 3 miles long from the dam site to connect with our little road at a point known as Sulphide. The railroad hauled all the cement and other construction materials for the dam, delivering the loaded cars at a point called Camp number 1, about one mile east of Nederland. From this point the little dinky engines of the construction company took the individual cars on to the dam. Construction of this dam required about two years time, much to the satisfaction of the railroad's officials. A glimpse of the road's profit and loss sheet for these two years, 1909 and 1910 showed their net profits as \$18,736.00 and \$27,142.00 respectively. Just before the big dam was finished the road ran an excursion train through the hole in the center of the dam with Oscar Bernsten, an old time engineer on the road, at the throttle of their Shay engine number 25.

When all construction work on the Barker Dam was completed, the power company offered to sell the 3 mile spur they had built down to Sulphide, to the railroad company, but the officials turned the offer down, consequently the power company ripped up the spur. And right there the D. B. & W. officials committed a "Faux Pas" that in all probability hastened to a very great extent, the end of their railroad.

A small but important mining boom in the vicinity of Nederland was on its way, in fact it had been on its way since the turn of the century and was gradually and slowly growing year by year. But the D. B. & W. officials failed to see the light. Why? We do not know. They, of course, were not fortune tellers and could not predict what would result from this new mining industry. Naturally, they chose the path they thought best, but like many of us, they made a bad guess. This new industry was the mining of Tungsten ore. Quoting from "The Boulder County Metal Mining Association," published in 1919, we read the following:

"The Boulder County tungsten industry, which began in 1900 when a common "Black iron" ore was discovered to be of commercial value, developed into such proportions by the close of 1918 that there was a total of 22 mills, representing an aggregate investment of a million dollars, and hundreds of mines well equipped for operation. The tungsten belt of the County of which Nederland is the center, reaches from Wolfram station on the west to Sugar Loaf on the east, and from Beaver Creek across the Middle and South Boulder Creeks to Glacier Lake. From this field, production gradually increased from 46 tons in 1900 to some 953 tons for the year 1913. A better market during 1916-17 and 18 stimulated a boom in tungsten mining which brought the County's yield up to an average of 2500 tons per year, for these past three years. Tungsten was called by some authorities as the "key mineral" of the war, being used for high-speed tool steel, valve steel, armor piercing steel and various other purposes vital to the prosecution of the war. Fully 25% of the local production was used in this manner."

However, the Denver Boulder & Western had folded up in the meantime, as will be explained later on. Consequently, the road was not on hand when this tungsten boom really got started. The outbound freight would not have amounted to a great deal, inasmuch as the extraction process is comparatively simple and the mills reduce tungsten ore to almost a pure concentrate. On the other hand, though, there was a tremendous amount of heavy machinery and camp supplies being shipped in continuously, and if the D. B. & W. had still been alive and had purchased the Nederland spur when they were offered the opportunity, they could in all probability, have had this business and the story today might have been a different one. As it was, the closest railroad connection was Rollinsville, some 7 miles south of Nederland, on the Denver Northwestern & Pacific (now the Denver & Salt Lake R. R.). At present, transportation for the district is either furnished by trucks or the Denver & Salt Lake R. R.

Tungsten mining has become an important industry in this territory, and with the present war going on, production has increased even more. Quoting from the Denver Post under the date of Sept. 28th, 1941, we read the following:

"Colorado's tungsten mines in the vicinity of Nederland are experiencing their greatest activity since the first world war by producing more than 150 tons a month of the vital metal used in the hardening of steel, R. H. Hastie, veteran mine operator of Nederland, said in Denver Saturday.

"The tungsten mining region which is about 12 miles long and 3 miles wide, in the Boulder Canon region, is one of the most productive in the country but is able to supply but a small percentage of the total amount of the metal used in the United States steel industry, Mr. Hastie said. He reports there are about 300 men working in the mines operated by three major companies in this section."

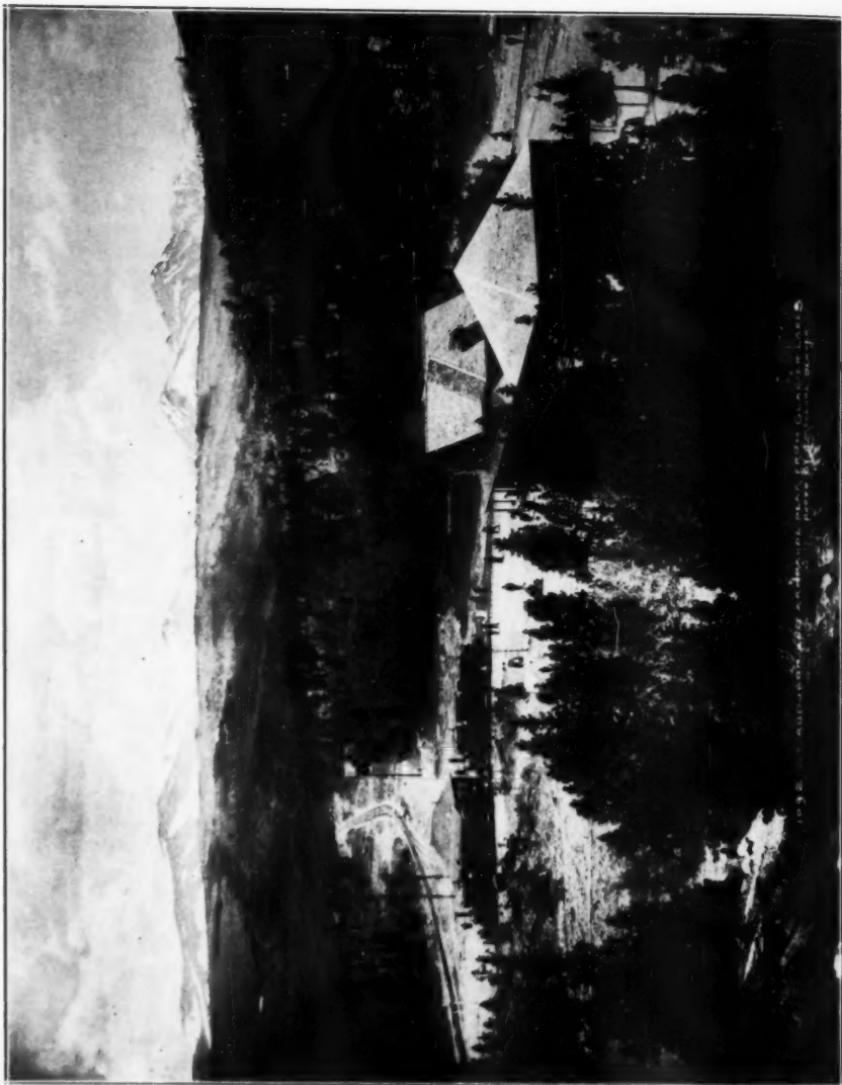
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—A. McCutcheon Photo.
Looking northwest at Glacier Lake, Colo. Loco. on left C. & S. #59, ex D. S. P. & P. #45, 2-8-0
Loco on right C. & S. #542, ex D. S. P. & P. #46, 2-8-0 Cooke 1883.

—A. McClure Photo.

Returning to our story, though: for some reason passenger traffic began to fall off, especially on the Sunset-Ward branch. The author gets a bit of delight here in laying part of the blame on the incoming of the automobile. The new method of transportation was beginning to show its face about this time and no one was realizing its effects any more than the railroads. Starting about the latter part of 1905, winter passenger service had been more or less discontinued on the branch to Ward with only about one train per week scheduled. However, during the summer tourist season, business would pick up a bit and daily service was offered. On the Eldora branch things were somewhat better and the year round schedules showed one daily train each way, and of course during the summer season two daily trains were always scheduled. After the Colorado & Southern had built the third rail into Boulder, the passenger business got to the point where the road was unable to handle all their traffic with only their 5 or 6 engines, consequently a number of the narrow gauge Colorado & Southern engines were brought over to help out and get traffic moving. Many old time photographs will bear out this assertion. Mention might be made here, also, of the winter ice business that was carried on at Glacier Lake. At that time a greater part of Denver's summer ice supply was obtained at Glacier Lake and also at Maddox on the Colorado & Southern. No finer ice could be found in the state, and the ice business was always a great stimulus to the freight department in the winter time, when the ice was cut and shipped into Denver for storage until summer.

The last week of November, 1913, played havoc with our little road. A big blizzard blew in and by November 30th, the line between Sunset and Ward was completely blocked with snow drifts. The line between Boulder and Sunset was kept open only with great difficulty. All through December the snow and drifts were getting worse, continuing to hamper service more and more. Early in January, 1914, in trying to clear the line between Sunset and Eldora, the road broke their one and only Rotary snow plow at Glacier Lake, about $22\frac{1}{2}$ miles west of Boulder. The officials sent in a call to the Colorado & Southern for use of one of their rotaries. On January 15th, the C. & S. brought over a plow from the Leadville District and rented it to the D. B. & W. The road took the plow, hooked up three of their locomotives, and sent the outfit west to see what they could do to clear up the line southwest of Glacier Lake. In 30 hours the crew had only succeeded in clearing out about 10 miles of track, but this did not quite make it to Eldora, which was 3 miles further on. The drifts were so bad they could get no further than a flag stop called Power Camp. The average snow fall in this section between December 1st and the 15th was seven feet. The crew were forced to give up the job and call it quits.

The deficits continued to pile up year after year. In the meantime, owing to lack of business, the operating agreement between the D. B. & W. and the Colo. & Southern which had been in force since 1905, was cancelled, and the C. & S. removed their 3rd rail line, completing the job by September 16th, 1916. However, the 3rd rail in

the yards at Boulder was not removed by the C. & S. until 1919. On December 26th, 1917, The Denver Boulder & Western filed a petition with the Colorado Public Utility Commission for permission to abandon the whole road. This petition was not granted. Again on May 1st, 1919, the road filed a second petition for permission to abandon. The hearing was postponed for a couple of months. In the meantime, there came a big cloud burst on the night of July 3rd, 1919, and a large portion of the line just beyond Boulder was washed out. Permission to abandon the road, came through just about this time, setting the official date as September 15th, 1919. But on account of the bad washout, coupled with the fact that the road had no funds with which to repair the damage, the date was pushed up to August 6th, 1919. The portion that had been washed out was temporarily repaired in order to get all rolling stock into Boulder and to enable the road to carry on the dismantling job, which got under way at once.

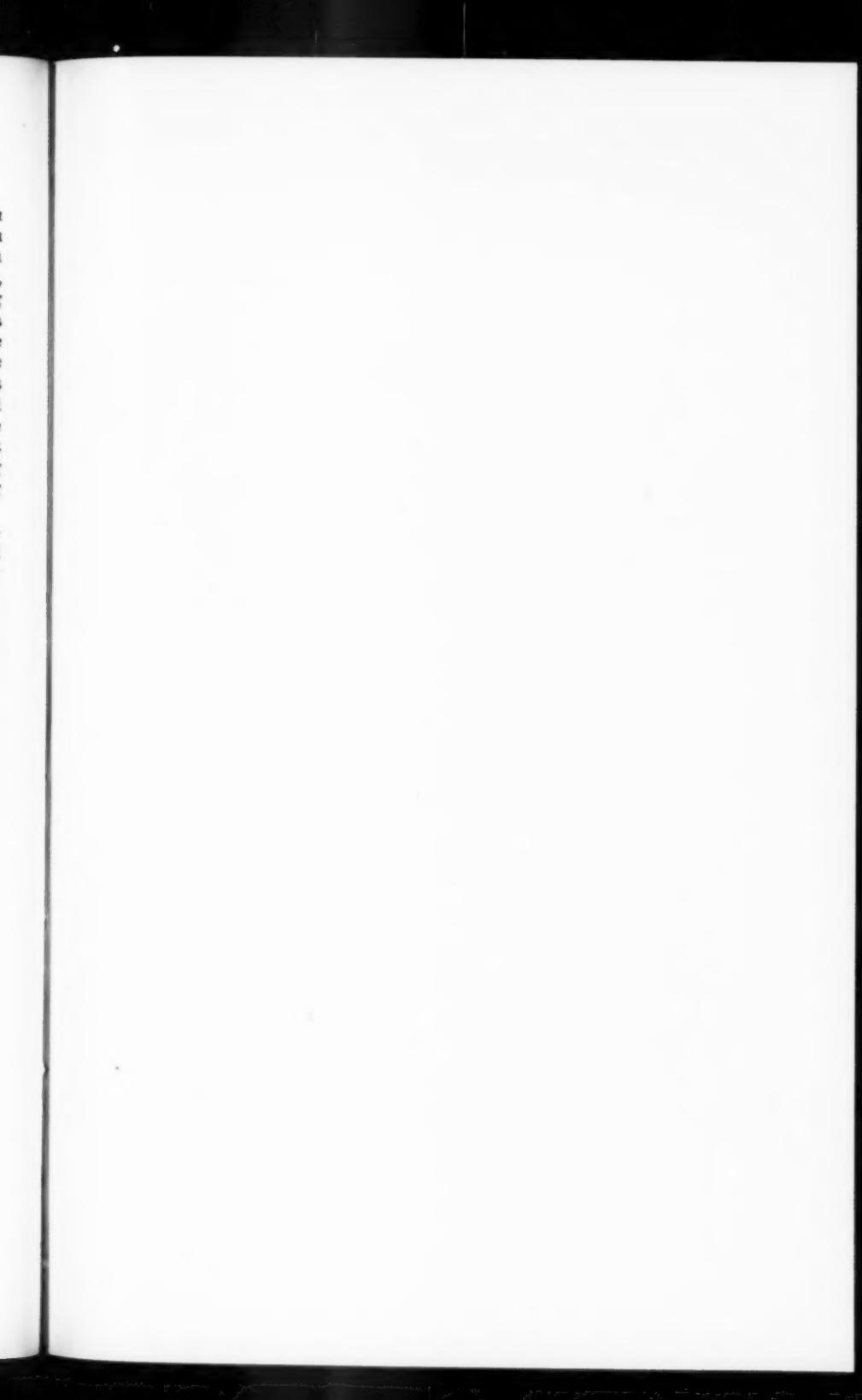
Within the next year or so, protestants against the road's abandonment, raised such a cry, that on March 9th, 1921, the case was reopened again. As a result, the Colorado State Supreme Court issued an order on March 14th following, (reversing the rulings of the Colorado Public Utilities Commission as previously issued) for the Denver Boulder & Western R. R. Co. to resume operations once again in an effort to make a fair test of the road's ability to earn the necessary income that would enable it to continue operations. This was, of course, an impossibility, on account of the condition of the trackage and the rolling stock, which had been partly dismantled, allowed to deteriorate, and which was in a very run down condition. This is assumed to be the "last gasp" of the old Denver Boulder & Western R. R., for nothing more is recorded, to the author's knowledge. Thus ends the story of another famous little Colorado narrow gauge railroad.

**The Following is a Complete List of All Stations & Stops
Along the Line**

Boulder	Sunset	Sunset
Orodell	Sugar Loaf	Mont Alto Park
Langdell	Tungsten	Gold Hill
Crisman	Glacier Lake	Brainerd
Black Swan	Pinnacle	Puzzler
Salina	Hill	Bloomerville
Wall Street	Blue Bird	Big Five
Wood Mountain	Anson	Frances
Copper Rock	Cardinal - Caribou	Ward
Sunset	Sulphide	New Market

Nederland		

Power Camp		
Lake Eldora		
Eldora		





—Collection of M. C. Poor.

D. B. & W. R. R. Wells Fargo Express and U. S. Mail Car No. 50, at Boulder, Colo.



—Collection of M. C. Poor.

D. B. & W. Coach #41 at Boulder, Colo.

BIBLIOGRAPHY

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Poor's Manual of Railroads covering each year from 1882 through 1919 inclusive.
All annual reports of The Colorado Public Utilities Commission.
All annual reports of The Union Pacific Ry. Co. from 1882 through 1889 inclusive.
The Corporate History of The Colorado & Southern Ry. Co. as prepared by the Legal and Engineering Departments of that railroad.
American Locomotive Co.
Mr. D. B. Sandford.
Mr. Judson D. Micawber.
Mr. Richard Kindig.
Mr. Forrest Crossen.
Mr. Jess Frazier.
Mr. George A. Trout.

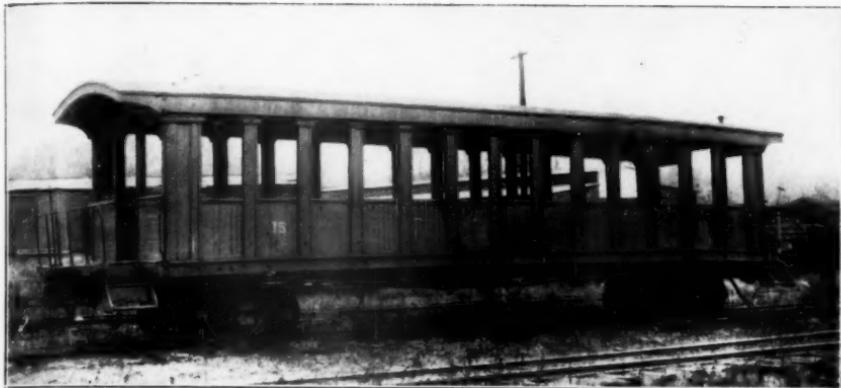
**Copy of Denver Boulder & Western Timetable as of June 19th, 1910,
And Published in the July 1910 Official Guide**

No. 7 Mixed	No. 35 Mail & Express	Miles	Eleva- tion	No. 36 Mail & Express	No. 8 Mixed
12:30 PM Lv.	8:05 AM Lv.	Denver	5,280	6:00 PM Ar.	10:30 AM Ar.
1:30	9:25	Boulder	5,400	4:35	9:05
1:52	9:45	Orodell	6,000	4:22	8:51
2:19	10:05	Crisman	6,500	4:07	8:36
2:32	10:14	Salina	6,800	4:00	8:27
2:45	10:24	Wall Street	7,100	3:52	8:18
3:17	10:45	Sunset	7,800	3:35 PM Lv.	8:00 AM Lv.
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No. 5					
10:50 AM Lv.					
11:12	13.3	Sunset	7,800	3:25 PM Ar.	
11:19	16.4	Mt. Alto Pk.	8,600	3:09	
11:29	17.8	Gold Hill	8,740	3:00	
11:37	20.0	Brainerd	8,780	2:44	
11:44	21.9	Puzzler	8,800	2:29	
	23.0	Bloomerville	9,030	2:21	
	23.6	Big Five Jct	9,100		
11:53	24.6	Frances	9,300	2:10	
12:01 PM Ar.	27.1	Ward	9,450	2:00 PM Lv.	
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No. 6					
3:35 PM Lv.					
3:56	10:50	13.3	Sunset	7,800	3:35 PM Ar.
3:57	11:10	17.8	Sugar Loaf	8,440	3:15
4:21	11:12	17.9	Tungsten	9,050	3:13
4:24	11:33	22.4	Glacier Lake	9,050	2:52
		22.8	Pinnacle	9,095	
5:07	11:36	23.3	Hill	9,000	2:48
5:20		27.3	Anson	8,595	7:10
5:23	12:14	30.0	Cardinal	8,715	6:33
5:30	12:24	32.1	Sulphide	8,263	6:21
			Power Camp	8,500	
	12:27	32.7	Lake Eldora	8,700	2:02
	12:30 PM Ar.	35.9	Eldora	8,730	2:00 PM Lv.
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DIRECT CONNECTIONS: At Boulder—With Colorado & Southern Ry. and Union Pacific R. R., for all points North, East, South and West. Solid through trains between Denver and all points located on The Denver Boulder & Western R. R.

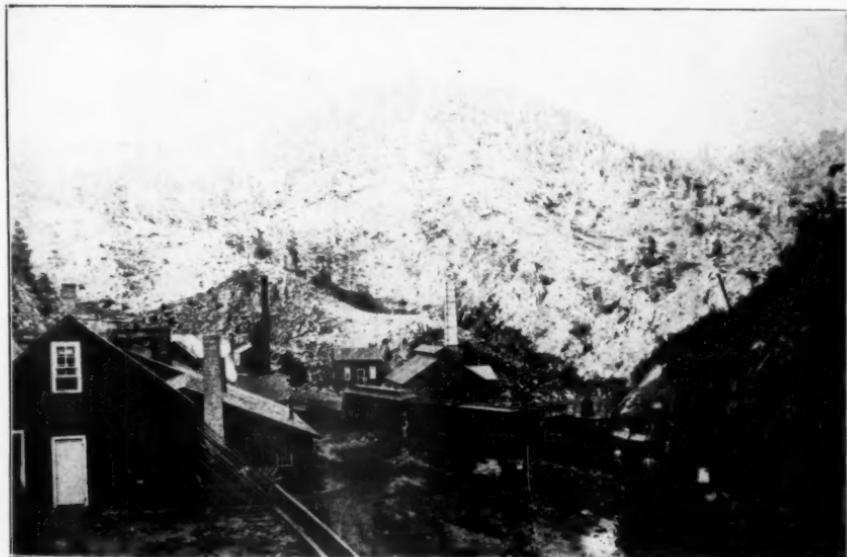
STAGE CONNECTIONS: Stage lines operate daily between Salina & Gold Hill ($\frac{3}{4}$ miles), and daily between Cardinal and Nederland ($\frac{1}{4}$ miles).

ALL EXPRESS HANDLED BY "THE WELLS-FARGO EXPRESS COMPANY."



—Collection of M. C. Poor.

D. B. & W. R. R. Observation Car No. 15 at Boulder, Colo.



—Courtesy of R. H. Kindig.

Colo. Cent. R. R. #155, 2-6-0 with three car mixed train at Gold Hill (later Salina) Colo. This narrow gauge line was the Boulder Canyon Branch of the Union Pacific and which later became the D. B. & W. R. R.





—Courtesy of Otto Perry.

D. B. & W. #1 at Boulder, Colo.



—Courtesy Otto Perry.

D. B. & W. #30 at Boulder, Colo.



The Following Gives a Fairly Accurate Resume of the Rolling Stock

Date	Loco.	Misc. Pass'r. & Bag. Cars	Misc. Frt. Cars	Caboose
1898	3	2	68	2
1899	6	11	68	2
1900	6	13 & 2	98	2
1901	5	13 & 2	98	2
1902	5	13 & 2	98	2
1903	5	13 & 2	98	2
1904	5	13 & 2	98	2
1905	5	13 & 2	98	2
1906	6	13 & 2	98	2
1907	5	13 & 2	97	2
1908	5	13 & 2	82	2
1909	6	13 & 2	62	2

From 1910 on through to 1918 when the road was scrapped, the above figures remain the same.

The Following Table Gives a Brief Outline of the Road's Financial Operations

For the year ending June 30, 1899....	\$10,789.00*	43,798 Pass'rs.	21,187 tons frt. mvd.
1900....	611.00*		
1901....	35,686.00*		
1902....	39,538.00*		
1903....	38,722.00*		
1904....		No report filed per George Trout	
1905....	32,897.00*	42,171	25,835
1906....	27,832.00*	64,716	27,832
1907....	46,160.00*	56,477	27,924
1908....	42,700.00*	43,048	26,612
1909....	18,736.00x	60,183	43,777
1910....	27,142.00x	62,771	53,461
1911....	10,149.00*	55,829	26,847
1912....	9,895.00*	40,633	19,699
1913....	2,602.00*	43,121	14,009
1914....	14,914.00*	49,554	12,701
1915....	3,459.00*		
1916....	10,493.00x	38,207	23,402
For the year ending Dec. 31,	1917....	2,047.00*	
	1918....	10,605.00*	11,012
			10,649

(*) Denotes deficit.

(x) Denotes profit.

The increase in business and the profits earned during the years 1909 and 1910 is due to the construction of a Hydro-Electric power dam at Nederland, by The Public Service Co. of Colo.

**Denver, Boulder & Western R. R. Motive Power and Equipment
Narrow (3-ft.) Gauge**

C. & N.W. # 1		Became DB&W #1 in Mar. 1909.
D.B. & W. # 1	2-6-0	Brooks #2841, 10-1897 15x22" 42" 66500
D.B. & W. #25	Shay	Lima # 540, 1-1898 12x12" 42" Note 1
C. & N.W. #30		Became DB&W #30 in Mar. 1909.
D.B. & W. #30	2-8-0	Brooks #2951, 4-1898 16x20" 37" 85000 Became Colo. & Sou. #74 in 2-1921.
C. & N.W. #31		Became DB&W #31 in Mar. 1909.
D.B. & W. #31	2-8-0	Brooks #2969, 6-1898 16x20" 37" 85000 Became Colo. & Sou. #75 in 2-1921.
C. & N.W. #32		Became DB&W #32 in Mar. 1909.
D.B. & W. #32	2-8-0	Brooks #2970, 6-1898 16x20" 37" 85000 Became Colo. & Sou. #76 in 2-1921.
C. & N.W. #33		Became DB&W #33 in Mar. 1909.
D.B. & W. #33	2-8-0	Brooks #41126, 6-1906 16x20" 37" 102000 Sold to a logging road in Louisiana.

Note 1—Mr. P. H. Graham of Morse Bros. in Denver seems to recall that this engine was sold to a small road near Salt Lake City and believes that "Little Cottonwood" was a part of the name.

When the Denver, Boulder & Western R. R. ceased operations, Morse Bros. took over some of the rolling stock. In Feb. 1921, the Colo. & Sou. Ry. traded five (5) of their second hand engines to Morse Bros. for three D. B. & W. locomotives—Nos. 30, 31 & 32. Mr. J. P. Colstadt, Agent at Boulder, now deceased, stated the passenger and freight equipment was sold to a road in Mexico and the rails to Japan.

In an old Catalogue of Morse Bros., the files of Mr. G. E. Lundbergh, Master Mechanic of the Colo. & Sou. Ry. in Denver, was found the following list of equipment:

Passenger coaches 23-27 (5), built by Barney & Smith, capacity 46 seats.

Passenger coaches 19-22 (4), built by Pullman, capacity 48 seats.

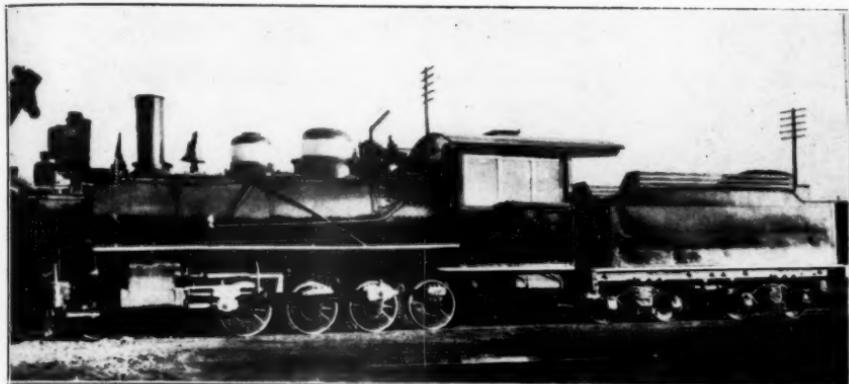
Passenger coaches 15-18 (4), built by Denver ?, capacity 68 seats.

Passenger coach 51 was a combination car built by Barney & Smith, capacity 28 seats.

Baggage car 50 was built by Barney & Smith.

Also listed in this catalogue was one three foot rotary snow plow, 17 box cars, 14 flat cars and 14 gondolas.

The firm of Morse Bros., located in Denver, Colo., dealt in second hand mining and railroad equipment. The catalogue from which this was taken is not dated.



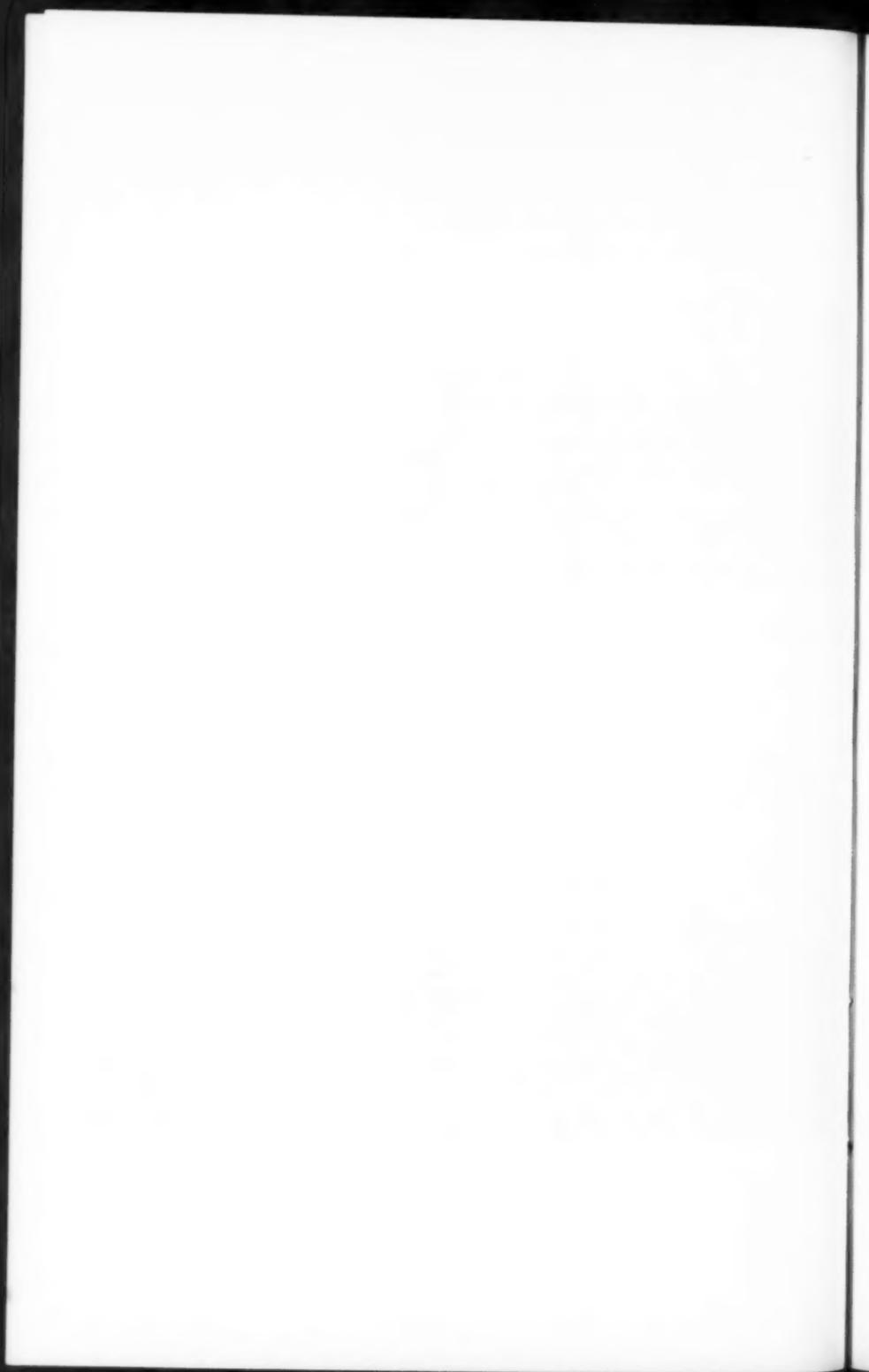
—Collection of M. C. Poor.

D. B. & W. #32, 2-8-0, Brooks (2970) June 1898. Ex. Colo. & N. W. 32. As C. & S. #76, pulled the last narrow gauge train from Climax to Leadville.



—Courtesy of Otto Perry.

D. B. & W. #33 at Boulder, Colo.



Louisa Railroad—1836-1850 Virginia Central Railroad—1850-1868

By LAURA E. ARMITAGE

On February 18, 1836, the Louisa Rail-road, original stem of the Chesapeake and Ohio Railway, was incorporated, with a capitalization of \$300,000. The sole design at the outset was the provision of a feeder line to the Richmond, Fredericksburg and Potomac Railroad Company, the organization being largely promoted by stockholders of that Company. The passage of the required legislation was suggested by them.

Local newspapers of the day say that Christmas came five days earlier in 1837, for on December 20 of that year the Louisa Rail-road was opened from Taylorsville, the junetion with the RF&P, now Doswell, Va., to Frederickshall, Va., twenty-two and a half miles, cost of construction, \$8,634 per mile.

A special train had left Richmond at 9 o'clock, arriving at Frederickshall at one, with a band playing and the American colors flying; people were joyous and wine flowed. The President of the Louisa Rail-road, Frederick Harris, for whom the depot is named, gave a dinner for the distinguished guests at his home. Toasts were rendered. The three cars and locomotive (here comes the "jeep," might have been exclaimed today), returned arriving at Richmond at 5:30 P. M., after stopping at the various wood and water stations along the way. Speed, fifteen to twenty miles an hour; distance covered, about forty-four miles.

By May 1, 1849, construction had progressed to Shadwell, Va., fifty two and a half miles.

In the Annual Report of 1850, the President said: "This Company, unlike all other Companies, applied the original capital stock, exclusively to the construction of the road and erection of depots; and when additional capital stock was raised, that, too, with the exception of a small sum, was expended in further extensions of the road. The stock of motive power, work shops, etc., necessary for carrying on the transportation of freight and passengers, with the exception of the purchase of one locomotive, was procured out of the *nett* profits of the road."

Transportation had been conducted for the Louisa R. R. by the RF&P until July 1, 1847, under an arrangement whereby the Louisa received one-half of the gross receipts from property and mails and two-thirds from passengers, with some added stipulations. However, effective July 1, 1847, the Louisa R. R. began operation with its own facilities and equipment, and in the next annual report the President and Directors had the satisfaction of showing that by conducting its own transportation there had been a saving to the Company of \$10,893.

The President of the Louisa R. R. at this time was E. Fontaine. He was the third president and served from November 10, 1845, to November 28, 1868, continuously, with the exception of the Year November 24, 1865-November 22, 1866, when Wm. C. Wickham superseded him.

Colonel Fontaine's span as President covered the Louisa Rail-road, its successor, The Virginia Central Railroad (1850-1868) and the Chesapeake and Ohio Railroad, for a few months in 1868.

An old minute book, presumably in Colonel Fontaine's handwriting, now the property of the Chesapeake and Ohio Railway, contains copies of letters written in ordering equipment for the Louisa. One to Messrs. Betts, Harlan and Hollingsworth, dated July 30, 1847, Beaver Dam, Va., reads:

"Gentlemen: I regret to find that my remonstrances against your disregard of the stipulations of our contract have failed to make the third car correspond with our agreement any nearer than the two first; this is discoverable at a glance, not having had time to examine it particularly.

"In relation to your repeated declarations that you hoped, the execution of the work would *exceed my expectations*, I cannot consider you serious; the most natural construction therefore to put on your letter, is to suppose that you consider me so utterly ignorant of what was proper, that I would be satisfied with anything.

"The expectations of the traveling public were not realized if mine had been, and if the Company does not lose Thousands of Dollars by the complaints of passengers from riding in what some have called *our horse carts* I shall be much gratified. If they had been delivered at the time stipulated, I might have prevented part of the mischief, by making new trucks (as I have now done), before we were compelled to use them for passengers: We have fixed an additional *sett* of what we call "center springs" as is done with every passenger car on the Rich. & Fredbg. and Pot. Road, *using the same kind of castings*, on which you seem disposed to put the blame of your omission.

"If you thought the proper fixture of the springs was unattainable with such castings, why did you not inform me and you would have been instructed on that point.

"Without any further remarks, I have to inform you, that I claim an allowance which will to some extent repay the expense necessary to make them approximately what they should have been by agreement. At the same time I am fully persuaded that no allowance I would ask, could make them what they ought to be, in point of strength alone, much less repair the injury I fear they have done to the credit of the road, in the commencement of conducting its business, on independent account, instead of having the transportation as formerly of the RF&P Company.

"The contract is not complied with—

"1st: in not having the cars long enough—the first one *has not* full space to seat 52 passengers."

"2nd: and not as wide as was stipulated thereby making the arrangement of the stoves incommodate passengers.

3rd: *not having 'roomy seats'* but altogether too contracted.

"4th: *not having* the springs 'fixed in the best manner.'

"These are not all the omissions but are enough to mention at the present time. The following is indispensable and a good portion is already done—viz—

"Hemming, rebinding and putting up curtains made of stuff not of good materials,' torn loose by common wind 2nd or 3rd day used—\$2.50

"Rivetting curtain rods on a brass plate and screwing on, several having shaken loose 1st few days—\$5.00

"Altering trucks, viz, drilling 4 holes in casting and two bolts to each car, so as to let them turn round before a trip could be run—\$10.00

"Screwing down *all the seat arms* and glueing one which a passenger broke 2nd day in rising from his seat—\$1.00

"Gluing and painting moulding which holds the curtain of ladies saloon also in a day or two from the start—\$.50

"4 guard irons (omitted) viz iron, making and putting on—\$16.00

"Sett of coarse cushions for servants (omitted)—\$6.00

"New sett of trucks and 'center springs' for 3 cars each \$200—\$600.00

Total \$640.00

"Rods and railing for drop platform too slender—\$.....

"Seats not made with cushions, but a thin layer of hair on thick boards—\$.....

"Painting of exterior about the style of a barn will have to be done over—\$.....

"It is painful to me to have a controversy made under any circumstances, but I should be faithless to my duty, if I did not require an allowance for the various defects mentioned above. I therefore make the following proposition, that you deduct from that amt. of your bill the \$640 above mentioned, omitting as I have done, a charge for the items left blank, and deliver your old trucks at Richmond subject to your order; or if you prefer, I will submit our contract to Major Gwinn, by whom I was introduced to you, or to a board of referees constituted in the usual way, and abide the decision.

"You will inform me of your conclusion in this matter, and when the amt. is ascertained which I am to pay you it shall be forwarded promptly.

"Please address your answer to Charles Thompson, Esq., Beaver Dam, Va., who will attend to my business in a necessary absence of 3 or 4 weeks and if you accept the compromise offered inform him to whom the trucks should be consigned.

Respectfully,

E. Fontaine, Pres. Louisa RRCO.

"PS. The sum charged for the new trucks and springs is less than Mr. Sharpe, Supt. of the RF&P Co. thinks is just."

By January 19, 1848, Col. Fontaine was again writing to Messrs. Betts, Harlan and Hollingsworth, giving directions and a description of material parts of the body of a passenger car, for which he wished an offer, to be delivered at Aquia Creek.

"Passenger Car, all the work to be executed in best work like manner.

"Length of Car Out and Out 43 feet 4 inches, with two drop platforms of best yellow heart pine 2 ft. 8 x 4 feet.

"Body of Coach from out to out 38 ft. Long x 8 ft. 8 inches wide.

"Bottom Rail of best heart yellow pine 38 ft. long 10x5 inches.

"Top Rail 42 feet long 8x3 inches best heart pine or oak, to be confined to the pillars with two rivets to each pillar.

"Bolsters to be 12x13 best white oak, 4 knee plates of wrought iron $\frac{5}{8}$ thick by 10 inches wide, each knee plate confined to the bolster with 3 bolts running through the bolster $\frac{3}{4}$ in. diameter and 3 running through the bottom railing of $\frac{5}{8}$ diameter.

"(This a substitute for the circular bar of iron extension bolts). An inside plank riveted to each pillar with 3 rivets and bolted to the bottom rail between every other window with a bolt of $\frac{5}{8}$ diameter, with a nut at the bottom, the plank to be $2\frac{1}{2}$ inches thick by 13 deep.

"The Ladies Apartment 6 ft. 4 in. long with a lamp box each side of the door with glass doors inside and out. Seats in the ladies apartment to be red plush sofas, back of the same.

"Gentlemen's Apartment to have a passage 16 inches wide, the floor laid with the best yellow pine dressed to $1\frac{1}{4}$ inches. Seats put crosswise, made of Mahogany wide backs stuffed with best black hair cloth well stuffed.

"Seats 2 feet 7 inches from center to center with a foot piece underneath, water cooler to hold 4 gallons, lamp box on each side of the door in the Ladies Apartment—with a stove fixed with hand railings and brass knobs.

"Drop platform of best heart yellow pine for the floor 2 steps on each side 9 in. wide and 1 foot high supports on 3 pieces of iron $2\frac{1}{2} \times 1\frac{1}{2}$ confined to the platform, upright rod from the bottom to the platform to the top of the coach $1\frac{1}{8}$ inches in diameter, balance of rod for hand railing 1 inch diameter 2 ft. high.

"Door to be 5 feet 10 inches high 2 inches thick paneled of Mahogany good yellow heart pine or curled maple.

"Windows to hoist fastened in from the outside with a wooden moulding instead of putty.

"Eves from one end of the car to the other 9 inches wide immediately over the window to throw off rain, etc.

"Curtains of strong drab twilled worsted.

"The car to be 2 inches higher on the inside than the first one made the Louisa Co.

"Painted handsomely on the inside and in a plain substantial manner on the outside.

"To have a bar of iron on each side $3\frac{1}{2}$ in. wide by $\frac{3}{8}$ in. thick running from the front bolster to the back bolster, bending with a regular bow, so that the Top of the bow of iron just comes to the bottom of the window, the said bar to extend from the bolster to each corner in the manner of a brace, and to extend up the corner posts as high as the bottom of the window and the said bar to be made fast to each pillar with rivets, there is to be an extension bolt of $\frac{5}{8}$ diameter between ev-

ery Pillar with a hooked head to hook on the 3½ inch bar and to go through the bottom rail with a nut at the bottom. Every pillar is to be confined to the bottom rail with a pilot point bolt." (Signed)

Very Respectfully, E. Fontaine, Pr. L. RRCO.

Another letter to the same firm consented to some alterations. This communication of April 25, 1848 said, in part: "The stove I wish arranged to take out in the summer, and as you suggest I think should have a hole for the Pipe to one side in the center of the Car equally convenient to the Ladies end, which should have a label on the door, 'For Ladies Only.' . . . I wish the seats all placed in their proper situations for summer and the Stove and Railing sent separate, which can be put in when we want it, the seats being fastened separate to the floor and not arranged to the side . . . the outside (of the car). I wish a dark red but I will in due time send you a pattern or sample that it may correspond exactly with the colour to which I shall repaint the others."

The price of this passenger car was \$1350, delivered on board a vessel at Baltimore, to be landed at Aquia Creek.

Three locomotives, the *Frederick Harris*, the *Chas. Y. Kimbrough* (named for the first two Presidents of the Louisa Rail-road) and the *Blue Ridge* had already been ordered and received from Norris Brothers. Now the *West-ward Ho* is under discussion.

"Office Louisa R. Road Co. May 10, 1848.

Messrs. Norris Brothers

Gentlemen

I suppose according to the agreement between yourselves and our Supt. the Engine is progressing pretty rapidly. I write now to say that Mr. Harrison proposes to go on next week so as to explain if necessary the alterations provided for. I would, therefore, prefer that you should suspend operations upon any such parts until he comes as we do not care to get the Machine sooner than the 15th June.

I observe that you are to furnish McCleary's smoke pipe and to substitute French and Bayard if we wish.

We think French and Bayard (Bairds) so far superior to anything we have seen, that I suggest for your benefit, the Policy of sending that in the first instance, as I feel confident we should prefer it.

The name we have adopted for the Engine is WEST-WARD HO—which I will thank you not to abbreviate the word westward."

(Signed E. Fontaine, Pres.)

By the spring of 1850 the road, formerly the Louisa, now, as of February 2, 1850, the Virginia Central—(Annual Report, March 6, 1850 states: "The change of name was suggested by its friends in the west, who thought that its corporate style should be appropriate to the enlarged sphere it seems destined to occupy.") has been opened to Charlottesville, Va. On January 1, 1851, it was opened eastward to

Richmond, Va., from the Junction, 26.30 miles. Mr. Fontaine, as of December 6, 1850, has written a letter to M. W. Baldwin, Esq., regarding an Engine, asking what would be taken off of the \$7,000 if "we make the tender. State also the charge for the tank alone." A memorandum follows:

"Cylinders 12 in. diameter and 20 in. stroke. Driving wheels 4½ ft. high with flanches turned to the guage sent, driving springs to be the long open springs, such as you recommend to us, well secured at the ends to keep them from twisting out of place. Also wish the plate truck with safety chains to the front end, the double and copperflues such as you shewed Mr. Harrison; the house not to be closed in all around but to have an open space of about 28 inches on the sides for curtains and sliding or lifting sash in front. We prefer the six wheel tender with the long and short end springs, if you will put an end in the boxes for the ends of the axles to butt against instead of a small shoulder which soon cuts into the brass and brings the boxes against the hubs. We also wish the throttle valve put low down as the stem works more freely than when up in the dry steam. I would also wish you to make the eccentric hooks of a more acute angle, and dispense with the hand shaft. The engine to be furnished with sand box and whistle instead of a bell."

Signed "(A true copy of Mr. Harrison's original)."

In 1848 the Annual Reports stated that the Louisa had in its possession 70 burden cars "built in our own shops and such as no other railroad in the State can boast of, as we believe. The Company have four engines nearly new and the requisite number of passenger coaches to accommodate the travel. They also have at this point the requisite engine houses and coach shelters." On account of purchase of engines, construction of burden cars, etc., the figure is given as \$28,162.30.

By 1850 the railroad, now the Virginia Central, owns five efficient 8 wheel locomotives, 91 *burthen* cars, 6 passenger and baggage cars, and, it is stated, "Is in a condition to do a large business, which they expect to realize another year." There were five white and seven colored men on trains as agents, engineman and fireman, receiving \$3,457.

So the equipment grew, as did the railroad. Of the twelve engines owned by 1853, the first five were built by Norris Brothers, three by Talbott and Brother, 1849, 1851, 1852; two by M. W. Baldwin, 1851, 1852; two by Anderson and Souther, 1852, 1853.

By 1857 the Virginia Central had been completed to Jackson's River, now Clifton Forge, Va., and grading and masonry 12.60 miles beyond to Covington, Va. (The Blue Ridge Railroad, built by the State, 16.81 miles, from Mechum's River to Waynesboro, part of this route, was operated by Va. Central). But in 1861 the War Between the States stopped progress and when the war was over, the finances of the south consisted of Confederate money, and there were Confederate bonds in the railroad's treasury. Also West Virginia was now a new and separate State and the Covington and Ohio Railroad, which the State of Virginia had financed to the sum of \$3,000,000 for grading

and masonry, lay now in the new state. The State Legislatures of Virginia and West Virginia passed identical Acts, whereby the Virginia Central undertook to complete the railway to the Ohio River. Combined with what was the Covington and Ohio, the Virginia Central emerged with a new name in 1868, The Chesapeake and Ohio Rail road Company. C. P. Huntington, as President, and associates entered the picture with a much needed financial structure in 1869. By this time, E. Fontaine, whose determination it had been to build to the Ohio River, to push on to it regardless of difficulties, had seen his dream beginning to take shape in reality. Other hands took up the responsibility. He retired. Today the Chesapeake and Ohio Railway Company in their territory follows the same route he and his associates built.

They also have an alternate route from Richmond to Clifton Forge, Va., the one following the old James River and Kanawha Canal, (the railroad using much of the tow-path) making for a fine grade. The railroad building on this was the Richmond and Alleghany (1878-1890) which C&O acquired on January 20, 1890, consisting of 251.04 miles. But that is a different story.

A HERO RETURNS

By LAURA E. ARMITAGE

In the report of the Virginia Central Railroad for the fiscal year ending September 30, 1865, there is listed under the statement of names, dimensions, condition, etc., of locomotives, items about the General Beauregard and Hero, as follows:

*General Beauregard :

Built by Wm. Mason and Co. Placed on Va. Central August 1861. Size of cylinder, 15x22. Weight, 22½ tons. Dimension of drivers 60". No. of drivers, 4. Dimension of fire box, 37x55x48. No. of flues, 135. Diameter of flues, 2". Length of flues, 11.7½. Diameter of boiler, 42".

*This locomotive was captured during the war from the Loudon and Hampshire railroad, and has since been returned to that road by order of the United States Government.

*Hero :

Built by Norris and Sons. Placed in service, 1862. Cylinder, 16x24. Weight, 27 tons. Diameter of drivers, 54". No. of drivers, 4. Dimension of fire box 87x38x52. No. of flues, 187. Diameter of flues, 1¾". Length of flues, 8.10½. Diameter of boiler, 45.

*This locomotive was captured during the war from the U. S. Military Railroad and has since been returned by order of the U. S. Government.

Four other locomotives are listed in 1865 as being rented from the U. S. Government and having been returned:

General Meade, General Sickles, Deveraux and Zebra, all built by Smith and Jackson and used on mail trains.

A locomotive, called the General Stuart, built by Rogers Loco. Works, placed on the Va. Central October, 1862, is not listed after the 1865 report, so perhaps it also was a captured locomotive and was returned.

In the report dated October 1, 1863, an item reads: "Two locomotives have been purchased from the Confederate authorities at a cost of \$50,000." Perhaps these were the Hero and General Beauregard.

The Railway and Locomotive Historical Society Bulletin No. 59 carries on page 70 a reference to the Hero, as follows: "The Hero . . . was lost and destroyed during the retreat of the Union Army under General Pope from Manassas, Va."

But the Hero wasn't "lost and destroyed,"—at least until after 1865.

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The General Offices of the Carrollton R. R. Co.



A section of the C. & W. R. R. immediately after the sale in 1927. Looking toward Worthville, new rail being laid.

The Carrollton Railroad

By KENNETH E. KIPFER

Although written in 1941, my story has as its inception the year 1905. This is a brief history concerning one of our few remaining prosperous short line railroads, prior to the war, and begins in the small Carroll County town of Carrollton Kentucky. Some thirty nine years ago, a small group of far seeing citizens banded together for the purpose of what turned out later to be the birth of The Carrollton Railroad.

Carrollton Kentucky, a prosperous little town of some 2900 community loving souls, situated high on the banks of the Kentucky and Ohio Rivers where the former joins the mighty waters of the Ohio, some 53 miles from the Queen City of Cincinnati Ohio. These people are proud of the fact they are being served by three forms of transportation, something which our larger cities cannot boast of, namely, highway, river, and last, but most important of all, a railroad.

In motoring from Cincinnati, one enters Carrollton, from the North East, over U. S. highway #42, which serves as one of its principal streets. Flanking both sides of this street are some of the most beautiful homes to be found in this section of the State, Carrollton, being a distributing point for prosperous tobacco growers of Carroll and surrounding Counties. Some of the finest burley tobacco is grown in this part of the State. Turning left, off the highway at the outskirts of the south western end of the town and traveling approximately two squares, you arrive at the general offices of The Carrollton Railroad. Upon entering the office one day I had the pleasure of making the acquaintance of Mr. R. L. Booth, the congenial and likable Vice-President and Treasurer of the railroad and were it not for his fine spirit of cooperation this story would not be possible, and to him I wish to extend my heartfelt gratitude. We immediately began talking about his railroad and this is how it all came about.

The Carrollton and Worthville Railroad, as it was originally called, was incorporated with a capital stock of \$50,000 and issued first mortgage bonds to the amount of \$95,000 and began operation on April 19, 1905, with the following incorporators; Mr. H. Everett Randall, Mr. A. Z. Boyer, Mr. James Gayle, Mr. John J. C. Watson, Mr. Theo. C. Snively, Mr. Harry R. Moore, Mr. Charles E. Davis, and Mr. G. D. Crain. Among the incorporators, the first officers chosen to guide the destinies of this new venture were Mr. H. Everett Randall, President, Mr. A. Z. Boyer, Vice-President, and Mr. James Gayle, Secretary and Treasurer.

Starting from Carrollton Kentucky, the home terminal, this picturesque little standard gauge road threads and winds its single track right-of-way through the rich rolling farm lands of the Kentucky River valley in a south easterly direction, crossing two trestles enroute, for a distance of eight and eight-tenths miles to Worthville Kentucky, the Southern terminus, where connections with the Louisville Division of the Louisville and Nashville Railroad is made. Incidentally, all

trackage of The Carrollton Railroad is located entirely within the boundaries of Carroll County. The railroad at present is operated for freight only, passenger service having been discontinued in 1926. The profile of the railroad and the locomotive now in service are of a nature that permits a maximum gross tonnage of 1800 tons to be handled either way. A 2% grade on a nine degree curve is encountered upon entering the yards at Worthville, while in the yards at Carrollton, a 3% grade is conquered many times daily.

The daily except Sunday freight train makes one round trip, leaving Carrollton at 7:30 A. M., returning at 9:30 A. M. The balance of the work day period is consumed in switching operations at Carrollton. Among the industrial plants which it serves are The Blue Ribbon Distilling Company, The Carrollton Furniture Manufacturing Company, manufacturers of high grade bedroom furniture, The Carrollton Coal and Sand Company, The Standard Oil Company and large tobacco warehouses. In 1940, 2276 carloads of sand and gravel and 717 carloads of burley tobacco, besides numerous carloads of furniture, coal and oil were shipped over their rails, all told, the average daily consist in 1940 totaled 10 cars. From December 1940 to February 1941, 10 to 22 million pounds of burley tobacco were also handled by rail and The Carrollton Coal and Sand Company averages an annual rail shipment of 150,000 tons of sand and gravel. No doubt the shipments of all the various industries have increased materially since our entry into the war.

As the one locomotive has exclusive trackage rights at all times, no fixed schedule is maintained and block signals, train orders and time tables are unknown, in so far as train operation is concerned. Communication between the two terminals, there are no way stations, is by telephone, owned and maintained by The Southern Bell Telephone and Telegraph Company. The personnel of the railroad consists of twelve employees and are made up of the following, 1 executive, 6 in transportation, 4 of these being in train and engine service and 5 in maintenance of way and structures.

The only rolling stock owned by the company at present, is one 36 ft. box car purchased second hand from the Louisville and Nashville Railroad some years ago. This car is not used in interchange service, but stays on its own rails, being used to handle less than carload freight in local interline service. Their purpose in purchasing this car was to avoid the per diem payment to foreign lines, which they would be compelled to do, if foreign equipment was used in LCL service on their lines.

When operations began in 1905, the road was laid with 58 pound rail exclusively. In 1927 the road was sold to the present owners and the name changed to The Carrollton Railroad. A rehabilitation program was immediately inaugurated. New cross ties were installed, road bed reballasted with gravel and the old 58 pound rail was replaced with the 70 pound variety which is standard today, with the exception of one mile of track that is laid with 90 pound rail. Aside from the 8.8 miles of main line, the road also has 1.54 miles of siding and industrial track.

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Carrollton Yard looking eastward, about 1927. Engine 460 in background.



The Main line looking eastward in Carrollton.

Motive Power

The Carrollton and Worthville Railroad and its predecessor company, The Carrollton Railroad never owned or purchased a new steam locomotive in its entire existence to date. Being a feeder line for the Louisville and Nashville Railroad, it would seem only natural to turn to them for their source of motive power supply, this is more or less the general practice of the majority of all short line railroads which serve as feeder lines to our larger railroads, and with one exception all their steam locomotives were former L&N engines.

The honor and distinction of opening up this new railroad to traffic, belongs to engine 2104 which arrived in May 1905, a former D-10 class 8 wheel American type with 18x24" cylinders; 64" drivers and a tractive effort of 16,500 pounds. It was built by the Rogers Locomotive Works in 1886 and was promptly relettered and given number 101. This, no doubt, was a gala day for the C&W officials and the people of Carrollton. One might easily sense the proud feeling of satisfaction and security, when the 101 dug in with her 64" drivers and started traffic moving. The C&W was now officially in actual operation.

No. 102, the second locomotive on the C&W was formerly L&N #347, built by the Pittsburgh Locomotive Works in 1887, 4-6-0 type, with 18x24" cyls., 51" drivers and weighed 98000 lbs. The L&N sold it about 1908 and the locomotive remained in service until 1927 when it was scrapped.

The first two engines undoubtedly gave long and faithful service, as evidence to the fact, their third engine did not put in its initial appearance until 16 years later. This engine is the only one the L&N was not called upon to furnish. Engine 103, as it was known on the C&W, was purchased from The Southern Iron and Equipment Company of Atlanta, Georgia, in 1921. It was originally built by the Glover Machine Works, also of Atlanta, Georgia. This engine was somewhat different than the two former ones, in as much as the 103 was a 10-wheel or 4-6-0 type with cylinders 14x20", her former road number is unknown as well as specifications, other than those given. No record as to her original owner is available either, but it did, however, bear Glover boiler #14205.

In 1925 the C&W purchased their fourth engine, number 341 a GI6 class, 10-wheel 4-6-0 type with 18x24" cylinders; 55" drivers and weighed 98,000 pounds without the tender. It was built by the Pittsburgh Locomotive Works in the 80's. It seems, that with the arrival of this engine, the C&W dispensed with the practice of renumbering their engines, but instead, allowed them to carry the same number during their active career on the road. This practice is still in effect at this writing.

Engine 449 was placed in service in 1926, a class F-1 mogul or 2-6-0 type with 18x24" cylinders; 55" drivers and weighed 103,000 pounds without the tender. She was built by the Rogers Locomotive Works in 1882.

Engine 460 made its appearance in 1927, with dimensions slightly in excess of engine 449, the exact specifications, builder and date are unknown to me at present, but in all appearances she resembled a Rogers product. This engine and a sister engine the 459 were exact duplicates and the only two engines in their classification on the L&N roster. They were used in passenger transfer service between Latonia, Kentucky, and the old Central Union Depot in Cincinnati, Ohio, many years ago on the L&N. Trains of the Louisville Division, or old LC&L Division of the L&N as it was called, terminated their run in the old Pennsylvania depot in Cincinnati, therefore, passengers arriving over this division from the South and wishing to continue their journey beyond Cincinnati, over some connecting line, other than the Pennsylvania or N&W railroad, would detrain at Latonia, and take the commuter to the Central Union Depot for their connections. These locomotives were a thing of beauty, painted a rich brown and trimmed in yellow with the inside of the cab and boiler head painted aluminum. The cab fittings were polished brass. After commuter service was withdrawn both engines were shipped elsewhere for service, engine 460 eventually finding its way to the Carrollton Railroad, as it was now called, the road having been sold in this year as previously mentioned. This engine gave good service for four years and in 1931 was replaced by engine 754 a class H7 consolidation, built by Rome in 1890, with 21x24" cylinders; 51" drivers and weighing 145,000 pounds without the tender.

Two years later, engine 754 was replaced by engine 755, a sister engine of the 754 in all specifications and details. It was with the advent of this engine that the Carrollton ceased purchasing their locomotives outright and began leasing them, a practice which continues to this day. Prior to this, all locomotives purchased by the company from the beginning of operations, were either scrapped or traded in on each succeeding engine.

Beginning to feel the pinch of the depression and with business dwindling as it did everywhere, the Carrollton struggled along admirably, so with tonnage becoming lighter and lighter the company again went back to lighter power, but as business gradually increased you will note heavier engines again drifted back to the Carrollton. The next engine for service was a light D-11 class, 8 wheel American type, number 122, with 18x24" cylinders; 64" drivers; 160 pounds boiler pressure and a tractive effort of 16,500 pounds. This engine, built by the L&N in the 80's, was practically a duplicate, with the exception of the classification, of the first locomotive used in the opening of the railroad in 1905. The Carrollton Railroad, so to speak, was right back where they started, in so far as motive power was concerned.

Engine 548 was in service in 1939. A class F8 mogul or 2-6-0 type, with 20x24" cylinders; 51" drivers; a boiler pressure of 160 pounds; tractive effort, 25,600 and weighed 136,200 pounds without her tender. She was a product of the Rogers Locomotive Works of 1906.

The year 1941 ushered in the heaviest and most powerful locomotive ever used by the Carrollton, engine 938, a class H20 consolidation, whose

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Engine 548 in Carrollton yards during lunch hour—1939.



Engine #938, heaviest and present engine in service on top of 3% grade, just visible
in lower right hand corner.

21x26" cylinders; 52" drivers and 175 pound boiler pressure give her a rated tractive effort of 32,800 pounds. She tips the scales at 159,200 pounds less tender and was built by the Cooke Locomotive Works in 1902. This engine, or one of a similar class, is in service at present.

The only other form of motive power ever used by the Carrollton, were two gasoline driven rail cars, built by the company in 1919 and powered with Ford motors, to handle passengers and mail. These proved too costly to maintain and with the discontinuance of passenger and mail service in 1926, they were immediately scrapped. Thus ended a short and none too profitable experience in gasoline rail power.

The company does not have the facilities for handling repairs other than those of the lightest kind. For monthly federal inspections and heavy repairs, the engine is taken to the main shops of the L&N at South Louisville, some 50 miles south of Worthville, another engine replacing it while repairs are made. No turntable or wye is available at Carrollton or Worthville, and for reasons known only to the officials of the Carrollton, the engine is used headed toward Worthville at all times, therefore, when these engines are taken to Louisville, it is necessary to run them backing up. As the railroad does not operate at night, the engine is serviced, fire cleaned and banked and left standing on one of the yard tracks over night in charge of an engine watchman, as no provisions for keeping the engine indoors have been made, but it is a flourishing little railroad in every respect and serves its community exceptionally well by being under very capable management.

We now take our leave of the Carrollton Railroad, knowing full well the important task these short line railroads are performing and of the vital service they contribute to this great world conflict. In comparison to size, they are standing on equal ground fighting shoulder to shoulder with their big brothers, while their praise is being sung far and wide, but when hostilities have ended and the world settled back to a normal life once more, do not allow these noble little roads to sink into oblivion as they were allowed to do a few years back, but give them our active and moral support for a long and rightful existence. They are just as much a part of their respective communities as we are.

A Trip to the World's Fair

By JOHN W. MERRILL

How many people remember this Fair held in Chicago in 1893? It was my good fortune to be able to save enough money to pay my railroad fare to this interesting exhibit held 50 years ago and I'll never forget it.

Our train left Boston, Massachusetts at 8:30 A. M., from the little one story depot that stood at the foot of Summer St., where the present South Station is located. Naturally, I had to know what locomotive was to haul our train to Hartford, Connecticut and to my surprise I found the #169, built by the Cooke Works, coupled onto our baggage car. It may be of interest to note that the New York & New England was the only road running out of Boston that used Cooke engines.

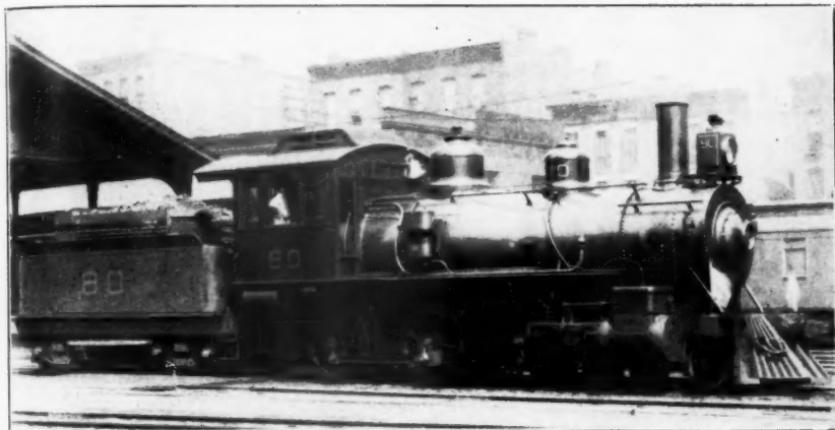
Our train was known as the "Isabella Express," making tri-weekly trips to Chicago. We had seven cars the morning I left Boston. I was glad when we finally started—I wanted to see everything. At South Manchester, Connecticut, the "one spot" of the South Manchester R. R. was waiting to receive our Boston passengers. She was a little 0-4-4 Baldwin "double-ender" with a diamond stack and plenty of brass work. Quite a contrast to the #20 of the Norwich & Worcester that I saw at Putnam, Connecticut.

We crawled over the Connecticut River bridge into Hartford. I was glad when we reached the other side because the bridge creaked and groaned fearfully. Soon afterwards the road built a new bridge at this point. At Hartford we said good-bye to the #169 and on account of the heavy grades, our train was divided. #141, a Rhode Island 4-4-0 pulled the first section and #23, a Hinkley 4-4-0 handled the second section. When I left Boston I was told to be on the lookout for some very big power which was running west of the Connecticut River. I did not have to wait long. Soon after leaving Hartford, on a siding, headed east, was the #153, a Rome 2-6-0. She was a monster and before long we passed a number of them, all pulling long freight trains.

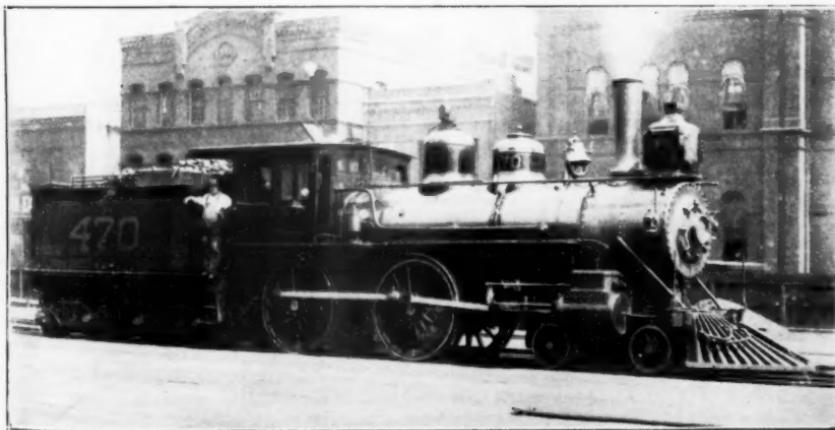
At Waterbury I saw the #4, a pretty little Schenectady 4-4-0, on the Meriden, Waterbury & Cromwell R. R., coming in on her mixed train. This little road owned five engines and extended from Waterbury to Cromwell on the Connecticut River. Today the rails have been taken up and the road is just a memory.

At Hopewell Jct., I saw the #6 of the Newburg, Dutchess & Connecticut R. R. She was a Brooks, 4-4-0, with cap stack and the fluted dome casings, first used by that builder. This interesting little road had several engines, none very large as the travel was light.

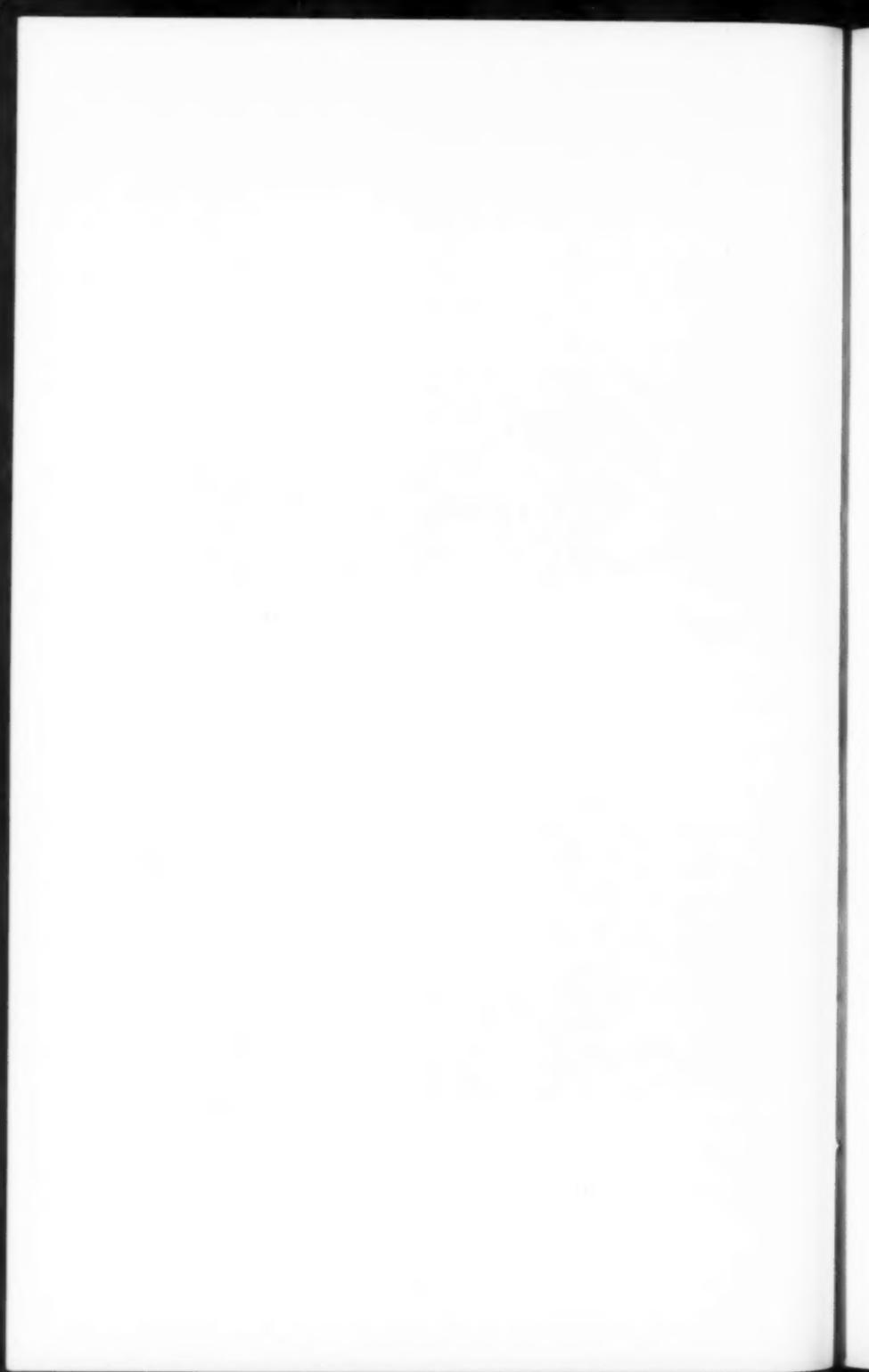
Fishkill-on-the-Hudson was the end of our journey on the New York & New England R. R. Here our sleeping cars were shunted onto the Ferry steamer "Maryland" by a Rhode Island 0-6-0 numbered 119 with a diamond stack. Her mate, the #118 was outside the engine house and these two engines did all of the switching at this point. From



C. T. & L. #80 looked ready for business. Rogers 1890.



Rock Island #470 was a little beauty. Brooks 1886.



the ferry boat, while crossing the Hudson River, I saw a number of heavy trains with Wagner sleeping cars on the New York Central & Hudson River R. R., hauled by those handsome Buchanan 4-4-0 locomotives.

At Newburg we were to continue our journey to Chicago over the New York, Lake Erie & Western R. R. Our sleepers were taken in tow by a branch line train where they were attached to the Chicago Express.

I had heard of the "Mother Hubbard" type of locomotive but had never seen one. The #269, a big Baldwin 4-6-0 took us in charge and I was thrilled, for she was a big "brute" for those days. In coupling up our sleeper they pulled out the coupler and after a very long wait we proceeded with only the safety chains between us and the car in front. A plank was laid between the platforms so that we could walk to the cars ahead. The sensation was not pleasant every time the train stopped and started as you may surmise.

Although I considered it dangerous, nothing happened. It was not easy to sleep but that did not bother me perhaps as much as the other passengers. The night was clear, there was a full moon and I saw lots of things of interest along the line.

We arrived at Salamanaca, N. Y., early in the morning. I was dressed and ready to go up front because I knew we would change engines here. Sure enough, there was the "Two spot," a big 2-6-0 of the New York, Pennsylvania & Ohio R. R. backing onto our train. She was built by the road and brand new with the initials of the road in big yellow letters. We had thirteen cars and I was rather surprised to see a locomotive with such large drivers attached to such a train as the country was quite hilly.

By noon the road was more level and we changed to #25, a little 4-4-0. Two cars had been cut out somewhere and late in the afternoon we stopped out in the country. I went up ahead and saw there was quite a grade ahead of us and a freight train on a siding. Our engineer was holding forth with the engineer of the freight, who by the way had the #668, a 2-8-0 type, for the loan of his engine to get the passenger train over the grade. The freight engineer expressed a decided unwillingness to loan his engine for that purpose. Some sort of a compromise was reached because the exchange was made and we started out with the #668, the #25 followed so that the crew of the #668 could take her back to the freight train.

I had always been interested in the tones of bells and whistles. The N. Y. P. & O. had very low tones on their whistles while those of the N. Y. L. E. & W. were very high pitched. Many heavy trains composed of from 10 to 12 cars passed us going east and I noted especially the handsome 4-6-0 locomotives handling them.

I noted with interest the names of some of the smaller roads: Meadville & Lanesville; Pittsburg, Shenango & Lake Erie; Chicago & Erie; Pittsburgh & Western; Cleveland, Columbus, Chicago & St. Louis; Pittsburg, Ft. Wayne & Chicago; Western New York & Pennsylvania; Columbus, Hocking Valley & Toledo; Sandusky & Columbus Short Line; Chicago Belt Line and others.

We were due at Chicago at 8:30 in the evening. We stopped at a little town around 8:00 P. M. and I opened the window and asked a small boy how far it was to Chicago. He replied, "you are twelve hours late and you won't get there until tomorrow morning." Sure enough, we were twelve hours late and when our train arrived in Chicago our Pullman was taken out into the yard. My brother had come to the station the night before to meet me but on learning the train would not arrive until the next morning, he went home.

I enjoyed the walk from the car to the station and would not have missed it for anything. I saw many types of locomotives on the various railroads.

While the railroad exhibit at the Fair was wonderful and almost all of the locomotive builders were represented—Baldwin, Brooks, Cooke, Rhode Island, Richmond, Rogers and Schenectady as well as the "E. B. Thomas"—designed by the Engineers of the Erie R. R., I was equally interested in the locomotives handling the trains in and out of Chicago.

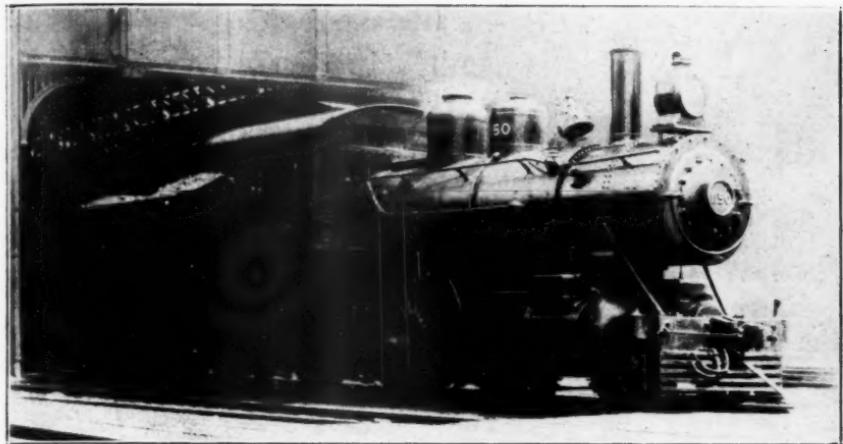
One of the sights that thrilled me the most was to see those little diamond stack 4-4-0 Manchester engines handling those ten and twelve car trains of Wagner sleepers on the Michigan Central. The Chicago & Alton engine, painted in two tones of red to match the train appealed to me. I liked the Schenectady 4-4-0's on the C. & N. W., I was interested in the 2-6-0's on the Burlington with their Belpaire fireboxes, used in passenger service. I saw the engines on the Milwaukee road, the Erie and perhaps the smallest were those used on the New York, Chicago & St. Louis R. R.

I saw the fast trains come in on the Lake Shore & Michigan Southern, including their "Exposition Flyer." A kind hearted engineer on the Wisconsin Central gave me a ride on his locomotive to the round-house that I enjoyed thoroughly. Why I did not make notes of the types that I saw in Chicago is a mystery to me. I've been sorry ever since.

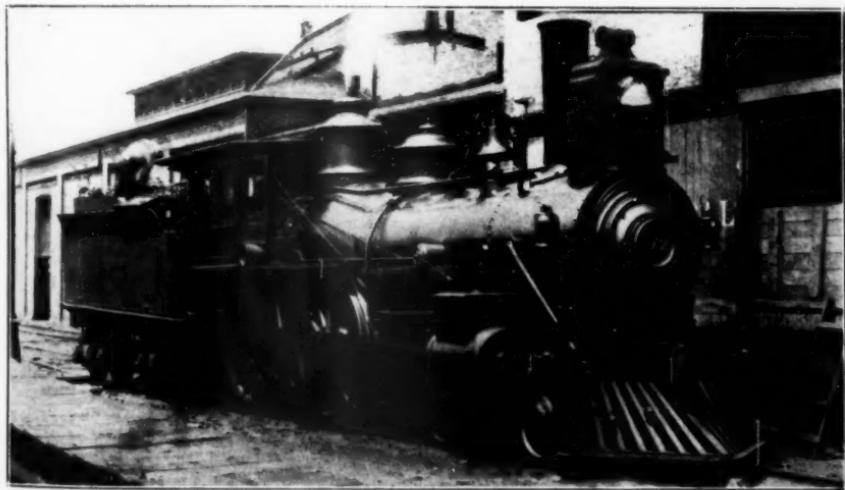
I intended to stay a week but a wire from my Father, announcing that he had a job for me—the first one by the way—cut short my visit. I left for Boston via the Chicago & Erie R. R. behind a handsome 4-6-0 locomotive. A day was spent at Niagara Falls and there I saw some handsome 4-6-0 engines on the Michigan Central with their heavy trains of Wagner sleepers.

When we arrived at Newburg, N. Y., all passengers for Boston boarded the Ferry boat, "Maryland." Before reaching the shore we were told that we would continue our journey by bus. This was an old fashioned affair with wooden seats running along the sides and padded with thick Brussels carpet. On the driver's seat sat a big negro and our motive power consisted of two donkeys whose ribs were very prominent.

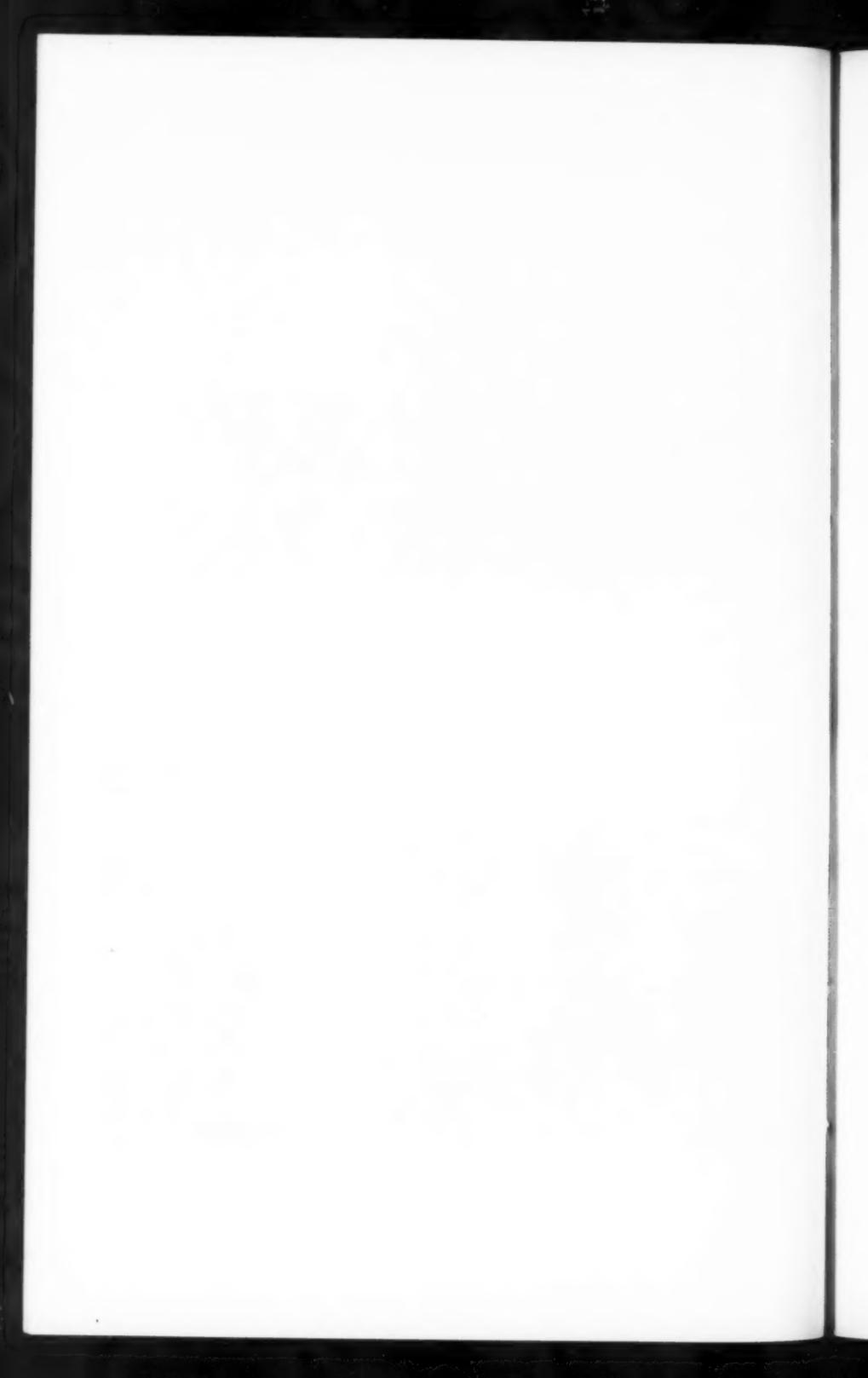
As the bus filled with passengers there was no room for little me and I climbed up with the negro. I found him a very kindly old



G. T. R. #1150 fresh from the builder. Cooke 1893.



M. C. #172 from old New England. Manchester 1872.



fellow and he advised me to get some coffee and doughnuts as there would be no time for breakfast in town. The doughnuts were eaten as we rode along and I nearly lost them as the grease rapidly soaked through the bag and also onto my trousers.

The ride through Connecticut on the New York & New England, my favorite railroad, I shall never forget—such curves and grades! We climbed a steep hill and as we started to descend we rounded a very sharp curve. Here a man was stationed with a red flag and he was housed in a small shanty. This was before the days of automatic signals and I suspect he was there to see that trains from opposite directions did not want the track at the same time.

I rode in the rear of the last car, my head out of the window nearly all of the time. I watched the locomotive make the curves and observed the sway of the cars. On some of the very steep grades the fireman stood in the gangway and I imagined he was watching the rear end so that if it went down the bank he could notify the engineer to back up and pick up the pieces.

Our speed over that rough track was terrific, our coach swayed from side to side and you could feel the flanges slam against the rails. As was typical of those days, no more cars were carried than was necessary. At Hartford our coach was dropped and as there were not seats enough in the other cars, I stood up all the way to Boston. We had the satisfaction of arriving in Boston on time and thus ended a most eventful trip in the red coaches of that famous line to the Hudson River.

Some Railroad Landmarks of New York City

By WARREN JACOBS

(A paper read before the New York Chapter of the Railway & Locomotive Historical Society, May 19th, 1944.)

The landmarks of the early railroad history of New York begin at the Battery. From that point they extend to Hanover Street, City Hall, North Moore Street, St. Johns Park, Canal Street, Centre Street, the Bowery, Vauxhall Garden, Union Square, 27th Street, 30th Street, and finally to the new Grand Central Depot, 42nd Street, opened on October 7, 1871 and considered then, as now, one of the great railroad terminals of the world. These various landmarks, from the Battery to 42nd Street, will be given in order, starting with the Battery.

Today few persons in New York, outside the members of this Society, would think it had ever been possible to take the train for Boston at South Ferry, yet such was the case, and from 1845 until the opening of the New Haven into New York, the Long Island Railroad carried many thousands of passengers between New York and Boston. In fact the Long Island was not originally built for local traffic, but for a through line from New York to Boston and New England. Its station at that time was at the foot of Atlantic Avenue adjoining the South Ferry, and the route to Boston was over the Long Island to Greenport, steamer to Allyn's Point, Conn., Norwich & Worcester R. R. to Worcester and the Boston & Worcester R. R. to Boston. The tunnel of the Long Island Railroad under Atlantic Ave., Brooklyn, extending from Columbia to Court Streets, is still in existence, but has not been in use since 1861 when the Long Island transferred its trains to Hunters Point. It is the oldest railroad relic in New York, with the exception of the Harlem tunnel under Murray Hill. An old time table published in the Boston papers in 1845 reads as follows:—"Daylight Line to New York via Long Island Railroad—Cars leave by the Worcester Railroad daily except Sunday at 6 o'clock A. M. for Allyn's Point where passengers take the steamer for the Long Island Railroad at Greenport. Dinner on board the boat. It is expected that passengers by this line will reach New York in time to take the afternoon train for Philadelphia on the same day. William Parker, Supt. B. & W. R. R. Boston, June 3, 1845." This must have seemed like lightning transportation at that time.

Leaving the South Ferry the next railroad landmark is at No. 1 Hanover Street. It was here that the first meeting of the stockholders of the New York & New Haven Railroad in New York was held on May 19, 1846 and at that meeting the following residents of New York City were elected Directors of the Company: Robert Schuyler, 13 Laight Street, Morris Ketchum, 141 Eighth Street, Anson G. Phelps, 31st Street, near Kip's Bay and Elihu Townsend, 36 Union Place. No. 1 Hanover Street remained the General Offices of the Company until the opening of the road on December 29, 1848 when they were removed to the Canal Street depot.

Near the City Hall, at a point about the site of the present Municipal Building, was the site of the Harlem Railroad station, when that road was opened from Prince Street, south, on May 4, 1839.

At the corner of Chambers Street and West Broadway stood the first station of the Hudson River Railroad, opened to Poughkeepsie in 1850 and to Albany in 1851. On the opposite corner was an old building occupied for many years by the makers of Ridley's candy, and "Ridley's broken and mixed candies" were sold by "train-butchers" on every train leaving New York for more than half a century. This old building survived for years after the railroad had moved up town.

A few blocks north on Hudson Street at the corner of Laight Street was the historic St. Johns Park Freight Station, now a parking space. St. Johns Park dates from about 1800 and the residences surrounding the park were the homes of the finest people in the city. Old St. Johns church on Varick Street faced the park, and later the freight station, the church was torn down some years ago. Up to the 1890's many of the old houses on Hudson Street were still standing, but in a very run down condition, but many still had the old brass door knockers and fancy iron balustrades. Around the corner at 13 Laight Street lived Robert Schuyler, first President of the New York & New Haven Railroad and this house was standing up to comparatively recent years. The statue of Commodore Vanderbilt on the front of the freight station was removed to Grand Central at the time the building was torn down. The old "Dummy" engines with the boy on horseback waving a red flag in front was a familiar sight on Hudson Street for many years.

At the foot of North Moore Street and extending to Beach Street, along the North River, was the site of the West Point foundry and one of the most historic railroad landmarks in New York, for it was here that the first locomotives were built in this country, the "Best Friend of Charleston" and the "West Point." Gouverneur Kemble was the head of the West Point Foundry, and Gouverneur Kemble Warren, the famous Civil War general, whose statue is on the summit of Little Round Top at Gettysburg, was named for him. A complete history of the West Point Foundry is in Bulletin 52 of this Society, written by Mr. Charles E. Fisher its President and this article is illustrated by valuable copies of the original drawings of the "Best Friend" and the "West Point" as well as the "Dewitt Clinton" which was built here also. The Foundry company removed to Cold Spring in 1838.

At No. 29 Canal Street, between Broadway and Elm Street, was the first passenger station of the New Haven in New York. This station was in use from the opening of the road into New York in December 1848 until July 15, 1857 when the New Haven moved up-town to a joint station with the Harlem road at 4th Avenue and 27th Street. This Society has tried for years to obtain a picture of this station, but without success.

Nearby at the corner of Franklin and Centre Streets was the New Haven freight station, cars being hauled down town through the Bowery

by horses. This station lasted longer than the Canal Street passenger station, as it was in use until December 31, 1885, when a new station was opened at Pier 50 East River. This Society owns many old time tables showing train service to Canal Street.

At 241 Bowery was the first passenger station in New York City, of the New York & Harlem Railroad. As the Harlem was the first railroad on Manhattan Island a brief outline of its history is in order. It was chartered April 25, 1831 and opened from Prince Street to 14th Street on November 26, 1832. From 14th Street to 32nd Street June 10, 1833, to Harlem October 26, 1837, to Williamsbridge September 3, 1842, to White Plains December 1, 1844 and to Chatham January 19, 1852. A report of a special committee of the directors dated February 14, 1834 states that the road was opened to Murray Hill and that five cars were owned. That there was a spacious hotel at Yorkville (now 86th Street) and it was described as a charming country location commanding a magnificent view of Hell Gate and that Harlem Plains, extending from about 116th Street to the Harlem River, which was a salt marsh, should become full of factories." The original charter of the New York & Harlem Railroad gave the company the right to use any form of motive power north of 14th Street, but was limited to horse power below 14th Street and to a speed of five miles per hour. All three of the early roads entering New York, that is the Harlem, New Haven and Hudson River, used horses to haul their cars down town. Seymour Dunbar in his History of Travel in America gives a very interesting account of the opening of the Harlem road, including cuts of some rare old time tables. In 1837 when the Harlem road was opened from Walker Street to Harlem Village (now 125th St.), the New York Evening Post of October 27, 1837 said that "the cars commenced running yesterday over the entire distance."

Vauxhall Garden, extending from Broadway to the Bowery, near what was afterward the Astor Library, was a fashionable summer evening resort and famous for its trees and flowers, music and refreshments. The New York & Harlem time table for 1845 says that "The White Plains trains will stop after leaving City Hall, only at the corner of Broome Street and the Bowery, Vauxhall Garden and 27th Street."

At No. 13 Washington Square was the home of James Boorman at whose home was held the organization meeting of the Hudson River Railroad. This house, located at the north east corner of Washington Square and Fifth Avenue, is still standing. James Boorman was of the firm of Boorman & Johnson dealers in iron and a very wealthy man for that day.

As already stated, Harlem engines originally came as far south as 14th Street, but on July 4, 1843 a locomotive boiler exploded at Union Square and 15th Street and several persons were killed, following this accident the City prohibited engines south of 32nd Street.

At the corner of 8th Avenue and 23rd Street, and standing today, is the Grand Opera House. It was known as Pike's Opera House when it was opened on January 9, 1868, but was purchased in March 1869 by

James Fisk and Jay Gould, and Fisk changed the name to the Grand Opera House. For many years it was considered one of the finest theatres in New York. Here the General Offices of the Erie Railroad were located and Jim Fisk made his headquarters, up to the time he was shot in the Grand Central Hotel, later known as the Broadway Central. The Fisk offices were fitted up in the most elaborate style. The theatre today is a movie house, and one with a history.

At 4th Avenue and 26th Street, extending to 27th Street, stood the joint station of the Harlem and the New Haven. The New Haven moved from Canal Street to this location on July 15, 1857 and it was presumably from this date that the custom of showing tickets at the gate originated, still in use today at Grand Central, as will be seen from the removal notice from Canal Street, published in the New York Tribune for Thursday, July 16, 1857. "New Haven Railroad Change—The trains of this railroad commenced Wednesday morning to start from the new depot at the corner of 4th Avenue and 27th Street. As a large portion of the furniture and conveniences used by the ticket agent etc., had to be moved on Tuesday night after the close of business at Canal Street everything up town this morning was naturally in a most glorious state of confusion; but this trouble will, of course, be soon remedied. The closing of the doors of the car yard against all but those showing passage tickets caused some dissatisfaction to the persons wishing to see their friends off by the trains, but the Supt. naturally thinks that the fine saloons of the depot afford the best and most suitable facilities for shaking hands and the exchange of more affectionate adieus."

Across the street on 4th Avenue stood the historic Putnam House, a noted hotel in its day and which was still in business for many years after the opening of the first Grand Central on 42nd Street. It was from the old 27th Street station that Abraham Lincoln left for Providence on the morning of February 28, 1860, after his great speech in Cooper Union the night before. During the Civil War thousands of soldiers used the 27th St. station. When the station was opened in 1857 the New Haven train service was as follows: six trains to Bridgeport and New Haven. Four to local stations between Stamford and New Haven, eight to South Norwalk, nine to Stamford, seven to Port Chester and Way stations, two to Boston. Three to Hartford and Springfield. Two for Housatonic Railroad. Three for Naugatuck Railroad and three for Danbury & Norwalk R. R. Very good service for that day and an interesting comparison to the New Haven service today at Grand Central.

27th Street station lasted until the Harlem moved to the new Grand Central Depot on October 9, 1871 and the New Haven followed on November 21, 1872. After the removal the old station was converted into the first Madison Square Garden, this lasted until June 16, 1890 when the magnificent new Madison Square Garden, with the figure of Diana on its lofty tower was opened, leaving not a trace of the old passenger station but a memory.

The tunnel under Murray Hill from 34th to 42nd St., was opened on October 26, 1837 and considered then quite an engineering feat. The

New York Mirror on the following week had an account of the tunnel and its opening. It is now the oldest railroad relic in New York and was used up to recent years by the Fourth Ave. street cars, it is now temporarily closed. The clearance was very low and showed how much the passenger car had grown from the early days.

The old station at 26th-27th Streets was abandoned by the Harlem road in 1871, as shown by the following official announcement:

New York & Harlem Railroad,
President's Office
4th Ave and 26th St., New York

September 26, 1871

The Passenger Trains of this Company will be run from the Grand Central Depot, 42nd Street, on and after Monday, October 9th, 1871.

The General Offices will be removed from 26th Street on Monday, October 2nd.

W. H. Vanderbilt, Vice-President.

The New Haven did not abandon the 27th Street station until November 21, 1872. A brief notice in the New York Tribune merely said that the New Haven had at last completed arrangements for its use of the Grand Central Depot and will do so on the above date.

On the south side of West 30th Street, about the middle of the block, between Ninth and Tenth Avenues, there stood as late as 1931, the passenger station of the Hudson River Railroad. The Morgan Annex of the New York Post Office now occupies this site. This station was opened on February 19th 1861 and in use by all trains until 1871, when the through trains of the Hudson River Division were transferred to the new Grand Central Depot. Local trains for Yonkers and way stations still left from 30th Street, but eventually were also transferred to Grand Central, with the exception of the "Dolly Varden" making three, and later two, round trips between 30th Street and Spuyten-Duyvil and this train ran up to the time the historic 30th Street station was torn down to make way for the Morgan Annex. Just east of the station was an old stable where the horses were kept of the stage lines that ran to the depot from various parts of the city. 30th Street was the oldest railroad station in New York City. Abraham Lincoln was the first passenger to use it when he came to New York on February 19, 1861 en-route to Washington for inauguration as President of the United States and his funeral train left from there for Springfield, Ill., in 1865. At 3.00 P. M. February 19, 1941 on the 80th anniversary of the arrival of Abraham Lincoln in New York, this Society unveiled a tablet placed on the Morgan Annex on 30th Street, marking the site of the old station and reciting the above facts.

The Harlem road had a station at 32nd Street and an engine house on the site of what was afterward the Park Avenue Hotel. On the Hudson River Railroad passengers were taken on at Canal, Christopher and 31st Streets. What these stations at 31st and 32nd Streets were no

one living today knows, as this was before the days of photography and no pictures of them exist. It is very doubtful if there was ever any station at Canal, or Christopher Streets.

A side-light of early New York history is the Cosmopolitan Hotel at the corner of West Broadway and Chambers Street, which stood diagonally across the street from the old Hudson River Depot, and is standing today. It is said, and doubtless with truth, that this is the oldest hotel in New York. It was opened in 1854 and in the days of the Hudson River Railroad was known as the Girard House.

On November 13, 1871 the trains of the Hudson River Division, for all through points, were transferred to the new Grand Central Depot, as stated. An interesting comparison to the through train service of today, is the first time table of the Hudson River Division from Grand Central. The number of through trains was eight, and they were as follows :

- 8.00 A. M. Chicago and Montreal.
- 10.30 A. M. Chicago.
- 10.45 A. M. Northern and Western Express.
- 3.40 P. M. Special Troy Express on Saturdays.
- 4.00 P. M. Montreal Express.
- 6.00 P. M. Express for Watertown, Oswego and Canandaigua.
- 8.00 P. M. Pacific Express.
- 11.00 P. M. Express for Troy and Albany.

The first time table states that "all local trains from north of Yonkers leave from new depot. Yonkers special trains from 30th Street west side as heretofore." The first time table was signed by C. H. Kendrick, General Passenger Agent.

Charles H. Kendrick was born at Nashua, N. H. in 1823 and entered the employ of the Nashua & Lowell Railroad in 1847. He became General Ticket Agent of the Hudson River railroad on March 10, 1852 and on November 1, 1869 was appointed General Passenger Agent of the consolidated New York Central & Hudson River Railroad.

The Grand Central Depot, when it was first opened, was considered way up town and the only means of reaching it was by horse car or carriage. The opening of the Third Avenue Elevated, a few years later, brought the station into quicker communication with the business section down town. In the first Grand Central the Hudson River Division, the Harlem and the New Haven each had separate waiting-rooms, the New Haven on the 42nd Street front and the Hudson and Harlem Divisions around the corner on Vanderbilt Avenue. A separate train shed for inward trains was erected some years later, the engine being cut off at 45th Street and the cars rolling into the inward shed controlled by the hand brakes. This method of "flying" cars into the old inward train shed lasted for many years.

The outward train shed was remarkably quiet for a busy terminal. All engines stood just outside the shed until a few minutes before leaving time, when they backed in and coupled on. The ringing of the bell

was forbidden inside the train shed. Of course the whistle was never used in the yard, except only in case of emergency to prevent accident.

It is said that Commodore Vanderbilt made the remark "for all time" when the station was opened. The first Grand Central Depot lasted until 1899 when it was enlarged, and this in turn gave way to the present magnificent Grand Central Terminal opened on February 1st, 1913.

The various ferry stations at Liberty, Cortlandt, Barclay, Chambers, Desbrosses, Christopher, West 23rd, East 34th, and West 42nd Streets and the Pennsylvania Station are not within the scope of this paper, but a few items of historical interest concerning some of them may not be out of place.

It was from the Erie depot, then located at the foot of Duane Street, that Abraham Lincoln left for the west in 1860, after his tour of New England and his great Cooper Union speech. He left from Cortlandt Street on February 21, 1861 for Washington and two months later the 7th Regiment departed from Cortlandt Street for the war.

In 1865 the casket of the Great Emancipator arrived at Desbrosses Street on the ferryboat New York. The funeral train of General Sherman left from Desbrosses Street for St. Louis in 1891.

West 23rd Street ferry was opened in 1869, the year Fisk and Gould acquired the Grand Opera House.

The Long Island ferry stations at James Slip and East 34th Street date from May 1861 when the Long Island trains were transferred to Hunters Point. A history of the Lackawanna ferries was given in Bulletin 50. Practically all of the railroad ferry boats were named for towns and cities along the line; Fanwood, Bound Brook, Chicago, Cincinnati, etc. The West Shore had a down town ferry station at Franklin Street, but has not been in use for many years.

With the opening of the Pennsylvania Station, the Hudson & Manhattan tubes and the Canal Street tunnel some of the ferries lost their old time importance, and a few routes have been abandoned, though others, notably the Central Railroad of New Jersey, and to Staten Island, connecting with the Staten Island Railroad, still do an enormous business.

In connection with the splendid motor coach service of the Baltimore & Ohio in New York it is interesting to note that the Fitchburg Railroad in 1845 operated a similar service in Boston. A notice of that day reading that passengers who purchased tickets at their office No. 11 Elm Street, Boston, "will be called for and conveyed to the Depot Free of Charge."

Such are the railroad landmarks of New York from the Battery to 42nd Street, and they are still there for anyone to see, though the city has changed so, in the course of years, it would take a vivid imagination to picture them in their original state.

The Numbering on the "Pennsy."

By CHAS. E. FISHER

During the past couple of years I have received several letters from our members relative to the system of numbering the locomotives used on this road. As one member wrote—"there seemed no sense to it." For the benefit of these few and perhaps for the other members of this Society, I will try and outline briefly the system of numbering the locomotives on this road, for, despite appearances, there *was* a system.

Let me state at the outset that from the viewpoint of revenues earned, miles of track, motive power and equipment, the Pennsylvania is our largest railroad system. Its corporate structure, although simplified to a certain extent in recent years, was very complicated. Thus, it is nearly impossible to make a general statement of fact without some exception appearing. As the result of this, I am limiting my general statements and if there are any exceptions, it is because they are of a minor nature.

With this in mind, let us study the road in question. Our railroads are organized according to either the divisional or the departmental method. The relative merits of either plan need not be discussed here. They have long been the favorite topic of discussion in the class room. The Pennsylvania R. R. is organized along divisional lines—by that, I mean the division superintendent has reporting to him directly the master mechanics, yardmasters, trainmasters, dispatchers and division engineers of his division. He not only operates his division, he maintains the right of way and the equipment allotted to him. He reports to his General Superintendent.

Next, let us consider the make up of the road and suppose we select the year 1914 as the time for our study. At that time the Pennsylvania was made up of the lines east of Pittsburgh and Erie and those to the west. Their operations were entirely separate—only one man had any jurisdiction on both systems and he was the president. The parent company originally extended from Philadelphia to Pittsburgh. In turn, it acquired by lease, control or purchase, other railroads. Some of these leased lines, such as the United Railroads of New Jersey were no longer active operating companies but the corporation still existed. Others, such as the Northern Central; Philadelphia, Baltimore & Washington and the West Jersey & Seashore, though officered by P. R. R. officials, were still active and still others, such as the Vandalia and the New York, Philadelphia & Norfolk were controlled through stock ownership.

Let us turn our attention to that portion of the road east of Pittsburgh in 1914. The Pennsylvania R. R. has always been a firm believer in an accurate method of keeping its accounts. Long before the Interstate Commerce Commission required a uniform system of accounting for all of our railroads—the annual reports to the stockholders of this road and the Louisville & Nashville stand out clearly in a class by them-

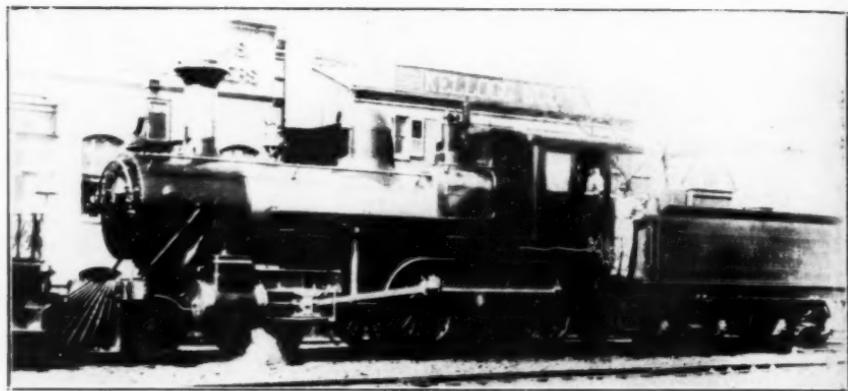
selves. For completeness and details they leave but little to be desired. These controlled roads were treated as individual roads. A box of freight moving between Baltimore, Md., and Altoona, Pa., the revenue would be prorated between the Northern Central for its share between Baltimore and Harrisburg, Pa., and to the P. R. R. for its share between Harrisburg and Altoona, Pa. The same applied to passenger revenue, even if one coupon was issued to cover a movement similar to the above.

The reason for this was as follows. In the case of the Northern Central; Philadelphia, Baltimore & Washington and roads similar to them, these corporations conducted railroad business in their own name. The legal relation of the P. R. R. to them was that of a stockholder, the size of whose holdings enabled it to dominate the affairs of these companies. By reason of this domination, the organization prescribed by the respective by-laws was the same for all companies. There was an identity of titles and duties of officials holding similar titles. Also, there was an identity of persons—the same individual was the General Manager not only of the P. R. R. Co., but of the N. C. R., P. B. & W. and W. J. & S. R. R. Companies; likewise the General Superintendent of Motive Power, Chief Engineer, etc. Because of the P. R. R. Co.'s relation was that of a majority stockholder, consideration had to be given to the rights of the minority stockholders. But from a legal and accounting standpoint, these companies were as independent of the P. R. R. Co., as the latter is from the New York Central R. R. Co. They could sue and be sued in their own names and they owned their own motive power, freight and passenger equipment. In general, this motive power and passenger equipment was kept on the owning road.

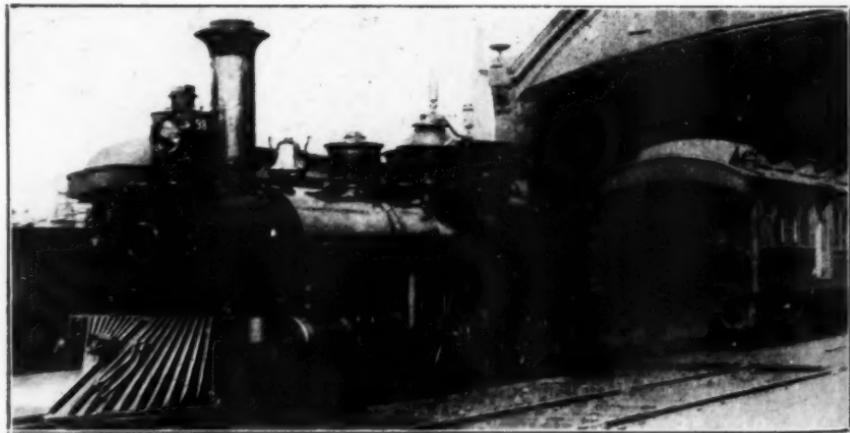
But, with the turn of the century, certain changes were in the offing. It was about January, 1903, that the P. R. R. inaugurated over its own road, through locomotive runs between Jersey City and Harrisburg. True, this applied only to the few trains that did not enter Broad Street Sta., Philadelphia, but it marked the beginning of what larger locomotives could accomplish. It was also about the turn of the century that through locomotive runs were inaugurated between Jersey City and Atlantic City, N. J. The route lay over the N. Y. Division of the P. R. R. to Trenton, thence via Bordentown to Delair Jet., joining the W. J. & S. at West Haddonfield, about five miles west of Camden and then to Atlantic City. These trains by-passed Philadelphia and Camden and a certain number of P. R. R. and W. J. & S. locomotives and passenger equipment were assigned to these trains. About 1904 the bridges between Philadelphia and Washington were strengthened to permit the E-2a engines to operate over that portion of the road. In August, 1908, through locomotive runs were inaugurated between Jersey City and Washington, D. C. These through runs helped reduce the number of engines handled at West Philadelphia—a very busy engine terminal and here again, a certain number of P. R. R. and P. B. & W. engines and equipment were assigned to this passenger service. However, on such trains that entered Broad St. Sta., Philadelphia, which was a stub terminal, a P. R. R. locomotive handled the train from Jersey City

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P. R. R. #1178. O-10, Altoona 1890. Old style lettering



P. B. & W. #98. D-3, Altoona 1871. Old style lettering, own series of engine numbers.

to Broad St. Sta., and here a P. B. W. locomotive backed onto what was the rear of the train and carried it to Washington. The reverse applied to the northbound movement.

It would have been a rare sight to have seen a Lines West locomotive in Philadelphia, but in Pittsburgh, where the two systems united, it was not uncommon to see locomotives beyond their respective limits. Pitcairn Yard, fifteen miles east of Pittsburgh and on the P. R. R. main line, became the eastern terminus of P. C. C. & St. L. engines and crews from Dennison, Ohio, about 1891 or 1892. This involved a movement over the lines east between Pittsburgh South Side and Pitcairn via the Monongahela Division of the P. R. R., Port Perry Bridge and main line of the Pittsburgh Division of the P. R. R., a distance of fifteen miles. This through movement continues, save that Columbus, Ohio has been made the western terminus. In the same way, P. R. R. crews and locomotives ran through to Conway Yard, 23 miles west of Pittsburgh on the P. Ft. W. & C. Ry. Forty years ago, P. R. R. engines and crews handled coke trains as far west as Niles, Ohio, 75 miles west of Pittsburgh. It was in May, 1904 that suburban passenger trains proceeded past Pittsburgh from their respective roads. Under this arrangement P. R. R. engines and crews took their trains as far west as Beaver Falls, 30 miles west of Pittsburgh and P. Ft. W & C. Ry. locomotives and crews took their trains as far east as Greensburg, 31 miles east of Pittsburgh. This was done to facilitate the suburban passenger traffic at Pittsburgh and for the convenience of the travelling public. There is no question but that it did both and only a falling off in the passenger traffic in recent years has caused this service to be discontinued. Generally speaking, the locomotives stayed on the rails of their owner.

To all external appearances there was only one difference—I'm back now in 1914. The motive power and passenger equipment used east of Pittsburgh was lettered "Pennsylvania" while that used west of Pittsburgh was lettered "Pennsylvania Lines." However, on the rear cab board of the locomotive, on the collar of the tender and above the doors of the coaches would be found the initials of the owning road. A group of numbers was set aside for the motive power of each of these subsidiary roads and to the initiated, he knew instantly where the locomotive belonged.

The railroads comprising the system west of Pittsburgh were officially designated and advertised as the "Pennsylvania Lines West of Pittsburgh." There was no similar designation for the railroads east of Pittsburgh. Each of these two groups were made up of roads directly operated and affiliated. On the railroads east of Pittsburgh we find, in addition to the P. R. R., the Northern Central; P. B. & W. and West Jersey & Seashore in the former class and the N. Y. P. & N. and the Long Island in the latter. The ownership of the Pennsylvania Lines was a bit more complicated. The lines extending towards Chicago and the several lake ports were known as the North-West System while those that extended to Cincinnati, Indianapolis and Chicago (via

Logansport) were known as the South-West System. However, these were only operating titles. The parent company of the Pennsylvania Lines was the Pennsylvania Company, a company whose entire capital stock was owned by the Pennsylvania R. R. Co. The Pennsylvania Co. operated under lease such roads as the P. Ft. W. & C. Ry., the Cleveland & Pittsburgh as well as others; it controlled such roads as the P. C. C. & St. L., but the road was operated by its own organization and the equipment of these and similar roads was lettered "Pennsylvania Lines," the initials of the subsidiary roads being indicated as we have already mentioned. The Pennsylvania Co. controlled the Vandalia and the Grand Rapids & Indiana in the same way as the N. Y. P. & N. and Long Island in the east, whose motive power and equipment carried the name of the initials of their owner on the sides of the equipment. But the Pennsylvania Company was more than a company that merely held a controlling stock interest in these roads, it did own motive power and equipment assigned to certain roads that it operated. A rather complicated structure, to which there may be some exceptions, but these statements cover the main points.

We have wandered quite a bit from our subject but perhaps these explanations may not be amiss. Suppose we consider how this worked out from an operating viewpoint and we select such a point as Harrisburg where the P. R. R. and Northern Central might use the same engine terminal. On the P. R. R. proper, engines were assigned to the grand divisions. A grand division was usually made up of three or more divisions. The roundhouse foreman would have on his A. M. report, P. R. R. locomotives that could be run east and west of Harrisburg and Northern Central locomotives that could be run north or south of Harrisburg. Under normal conditions these assignments were carried out, providing the locomotive was not held out for repairs. But suppose word comes that one of the trains for Washington, leaving in the wee small hours of the morning, will leave Harrisburg over the Northern Central in several sections—perhaps Congress is opening, it might be caused by any number of good reasons. If the Northern Central cannot provide sufficient locomotives of the proper type and size to handle these extra sections, then arrangements must be made with the P. R. R. for the loan, at the regular rental, for the number needed to handle this business. A better illustration perhaps is the summer business handled by the W. J. & S. between Atlantic City, other South Jersey seashore resorts and Camden or Broad St. Station. For the two summer months, until after Labor Day, this business, especially on week ends, was unusually heavy. Had the W. J. & S. had to own a sufficient number of locomotives to carry the peak load, a certain proportion of them would have been idle nearly ten months of the year. The arrangement was that a certain number of P. R. R. locomotives were rented for this period and returned at the close of the summer season. Thus, the P. R. R. acted as a reservoir for locomotives and equipment to which the subsidiary roads could draw from when these roads needed this additional equipment.

Here the question immediately arises—were the locomotives assigned definite passenger runs? In the main, I think there was a pretty successful attempt at regularity. The majority of the locomotives handling the suburban trains in Philadelphia were pretty regular. The #779 (E6s) was pretty regular on the southbound "Congressional Limited" and the #13 of the same class was a reliable standby on the 4.30 P. M. western train from Broad Street. On the other hand, on five consecutive days I witnessed five different locomotives handling their crack train—the "Broadway Limited" between Manhattan Transfer and Harrisburg. Many of the passenger engines on the New York Division make two round trips daily between Manhattan Transfer and Philadelphia, but even so, there were some pretty consistent assignments.

Prior to the adoption of the present system of numbering, 1902-1903, it was not impossible for locomotives of the same number and of the same classification to depart at about the same time of day from Broad St. Station. This meant that the locomotive had to be identified by the initials of the owning road as well. Thus for operating and accounting purposes, it was necessary to introduce a system of numbering that would fit the conditions as they existed on this road, rather than assign a group of numbers to the different classes of locomotives. This assignment was a success but it left the uninitiated slightly bewildered.

The Pennsylvania R. R. was one of the first railroads to standardize its locomotives and to reduce the number of classifications. It was plain common sense for this big system to do it and it has reduced the time the locomotive was held out of service. With Altoona and Juniata Shops building locomotives and the Baldwin Works helping when necessary, the entire system had a fleet of some 7000 locomotives. Coverages had to be allowed for possible emergency and this was usually accomplished by doubleheading. Plans to provide for a better operation of this big system were studied and upon the return from Federal Control (March 1, 1920), the parent company, The Pennsylvania R. R. Co. assumed direct operations of all its properties, both east and west of Pittsburgh, the only exception being the Long Island R. R. and several short unimportant lines. Thus one company, The Pennsylvania R. R. Co., has operated the entire road extending from New York to Chicago and St. Louis and all locomotives and rolling stock has been lettered—"Pennsylvania."

So much for the carrier, let us now turn to their locomotives. The Pennsylvania R. R., in common with many of the roads, listed a good description of the locomotives in the annual reports to their stockholders. The first engine roster appears in the report for 1850. Here we find 26 locomotives, all named, listed. In the report for 1854, we find 58 locomotives listed on Eastern Division and 59 on the Western Division, all listed alphabetically by name. In the report for 1857, the numerical assignment, together with their names is given for these locomotives and, in addition to the two divisions already mentioned, the Philadelphia Division has been added. The numbers run as high as 211. The report for 1858 omits the names of these locomotives and the report

for 1862 concludes the rosters found in these annual reports. The numbers ran to 276 and it can be readily appreciated that these rosters took up no little space.

Now the policy of the motive power department, so far as numbering its locomotives, was no different than any other road. When a number became vacant either because the locomotive was scrapped or sold, a new locomotive was assigned this number. When the supply of vacant numbers gave out, numbers continuing from the last high number were assigned. And, let me add, this has been the method employed until recent years.

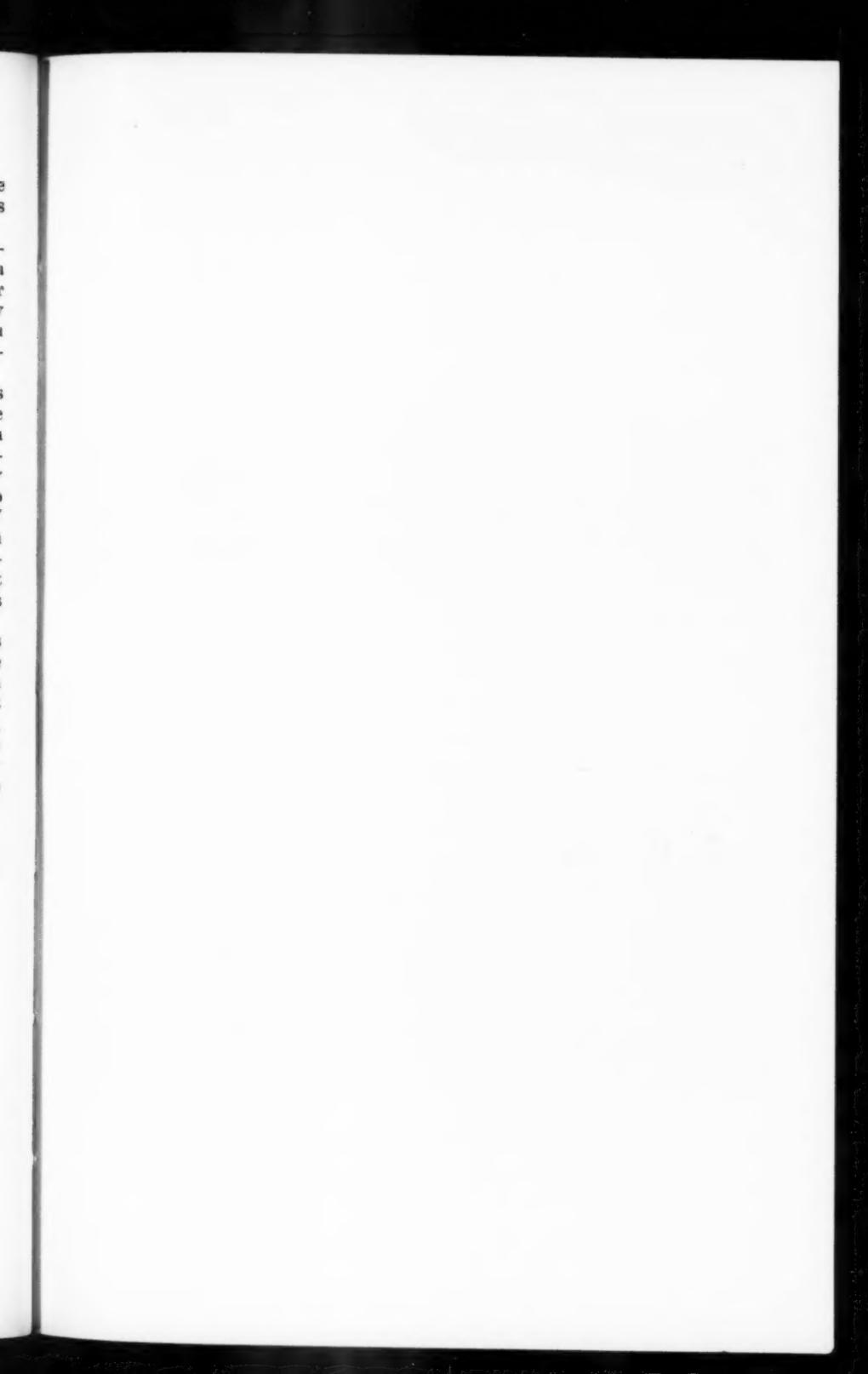
By 1884 the numbers had reached 1106. A classification for this year reveals several interesting facts. The old "John Bull" on the Camden & Amboy is numbered P. R. R. 601. From this classification and by checking the data, it appears that the Camden & Amboy engines had 600 added to their numbers while those from the New Jersey R. R. & Transportation Co. had 700 added. However, there seems to have been a slight overflow from the former for Nos. 762-764 and 767 are definitely Camden & Amboy locomotives. Another one that we can detect is P. R. R. #954, built originally for the Frederick & Pennsylvania Line R. R. Thus, the series was maintained, by filling in vacant numbers with either new locomotives or those acquired from other roads and by adding to the series in the same manner.

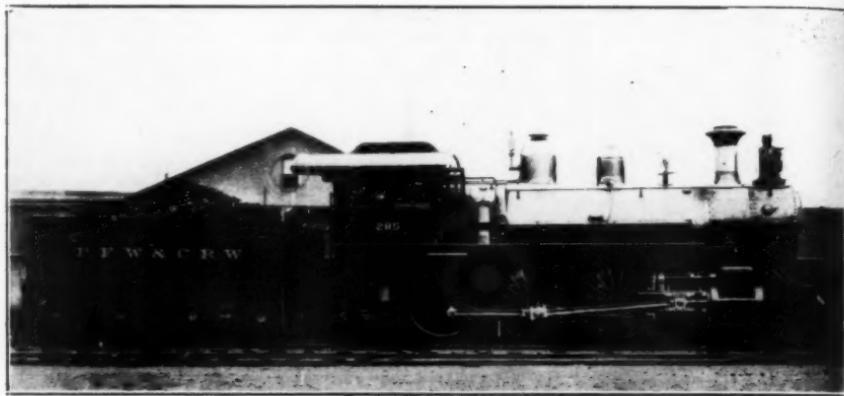
In the next two decades the road had expanded and traffic demands had caused a large number of locomotives to be built. It had been the policy of the P. R. R. and for the subsidiary roads to have their own individual numbering and this applied to the roads both east and west of Pittsburgh. Thus, the Northern Central, P. B. & W., P. Ft. W. & C., and all of the other roads commenced at number 1 and continued to the end of their own series, filling in and adding to in just the same way as the P. R. R. Thus, there were as many "Number Ones" as there were subsidiary roads, plus the No. 1 of the P. R. R., and this, as has already been stated, sometimes made trouble.

As early as 1883 the roads comprising the "South-West System" took the initiative and tried to prevent this duplication. Then we find something like the following assignment of numbers:

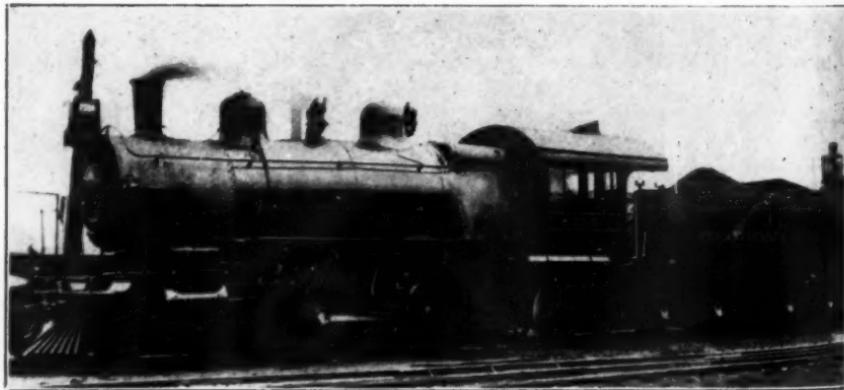
P. C. & St. L.	locomotives	1-200
Little Miami	locomotives	Two hundreds
C. St. L. & P.	locomotives	Three & four hundreds
Penna. Co.	locomotives	Five hundreds
J. M. & I.	locomotives	Six hundreds
Indpls & Vincennes	locomotives	Seven hundreds
C. & M. V.	locomotives	Eight hundreds

This seems to have been the germ to the present system for it was only a short time afterwards, about 1890, that the Pennsylvania Co. instituted something of the sort for the roads in the North-West group. Incidentally, these engines were lettered and striped according to one standard. The initials of the owning road were clearly painted on each





P. F. W. & C. R. W. #285. G-3 (old Class X) Ft. Wayne (336) 7-1893. Renumbered 7285.



—Courtesy of R. C. Schmid.

Pa. Lines #7315. E-2a, Juniata (948) 10-1902. New style lettering for Lines West.

side of the tender but the full name of the corporation appeared on the letter board of the passenger coaches. It was one day, about 1896 or 1897, that quite a stir was made in Pittsburgh. There steamed into the Union Station a locomotive painted in Tuscan red, the standard passenger coach color. Red cab, jacket, front end, dome, sand dome, wheels, pilot and tender, she must have been a gorgeous sight! She was either a "Modified O" (D-10) or a "Modified P" (D-13), that originated on the old Indianapolis (now Columbus) Division and was sent to be shown off. The idea evidently did not "take," but curiously enough it was repeated in 1929 when the #5409, K-4s, Baldwin, 1927, was painted Tuscan red. As such it ran between Manhattan Transfer and Harrisburg, but here again, its gay "dress" soon gave way to the conventional black with gold stripes.

I cannot state exactly when the present system of numbering was put into effect, both east and west of Pittsburgh, but east of Pittsburgh it was not until 1903. This system provided that a continuous group or block of numbers be set aside for the use of the locomotives of the P. R. R. and each subsidiary road. This was accomplished by simply adding the proper "thousand" or thousand plus so many hundreds to the numbers already in use. Controlled roads, such as the Vandalia, G. R. & I., N. Y. P. & N. and Long Island still retained their own series and lettering. And, as I have already stated, equipment on the roads east of Pittsburgh was lettered "Pennsylvania" while that on the Lines West was lettered "Pennsylvania Lines." Initials of the owning roads were placed on the back board of the cab, the back collar of the tender. Tenders of the passenger locomotives were striped, those of the freight engines were not. The locomotive number was retained under the cab windows, the passenger locomotives had some striping but the freight locomotives were plain. While the passenger equipment is not quite within the scope of this article, it is of interest to note that not later than 1894 and perhaps during the last of 1893, the passenger equipment of the Northern Central, P. B. & W. and W. J. & S. are relettered "Pennsylvania," the same as on the parent road. Other than on the P. R. R., there was placed on the letter board, at each end of "Pennsylvania," the initials of the owning road. Baggage, Mail and Express cars differed from the above and cars of the same kind were grouped and assigned blocks of numbers to prevent duplication of numbers.

If the system of numbering its locomotives was complex, the locomotive classification books were simple, though they must have been costly to print. The 1884 classification is a book of 100 squares per page and in each square is given the builder, class and date of construction. Where no builder is given, Altoona Shops are understood. These 100 squares measure $3\frac{7}{8} \times 2\frac{5}{8}$ ". There are ten locomotives per line and ten lines. Thus, if you wished for the record of #256 in 1917, you would turn to the page of the "2 hundred" locomotives, fifth line down, seventh space in and you would find this locomotive was Class H-6, built at Juniata Shops in 1899. Superimposed on this square is a block of purple ink that indicates this locomotive was assigned to the

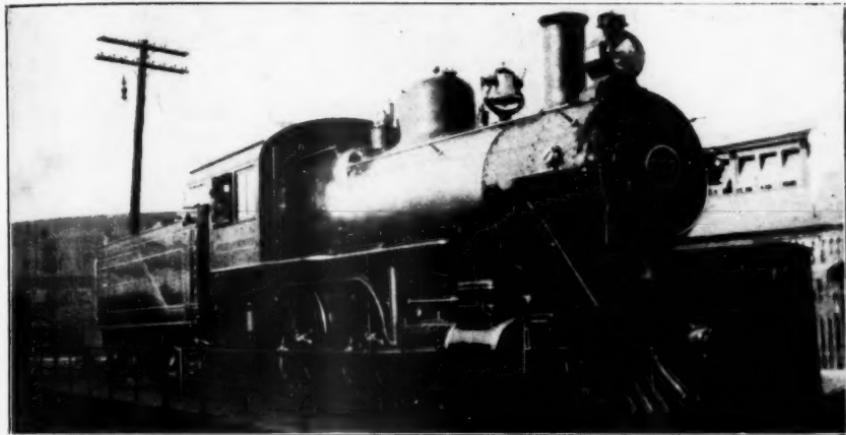
Western Pennsylvania Grand Division. Five different colored inks, in addition to plain white, indicated the division assignment. The 1902 classification book had these number blocks in colors and was probably about the first of their use. This type of classification book was discontinued after Jan. 1, 1920—that was the date of the last issue. The dimensions of the locomotive classes were always published separately.

I hope I have made myself fairly clear so far. The Pennsylvania was a huge system embracing several thousand miles of track and owning several thousand locomotives. Because of its corporate structure, a system of numbering had to be devised that would fit in with it and the assignment of a group of numbers to an individual class or type would not serve the purpose, not without the numbers would be carried into five figures which would make it difficult for despatching and this was unnecessary. The reader must bear in mind that the need for this system ceased to exist after March 1, 1920, when the parent company extended its direct operations over the subsidiary and affiliated roads. Since that time these roads have acquired no rolling stock or motive power, all new equipment has been acquired for The P. R. R. Co., and since that time blocks of unoccupied numbers have been assigned to new locomotives of the same class. The first of this group of locomotives were the Class C-1, Nos. 6550-6599, built in 1925. At the time the I-1s engines were built—Nos. 4225-4699, the numbers 1-4224 were practically filled. Such vacant numbers as existed were insufficient to take care of 475 engines, so the numbers 4225-4699 were really an extension of the old system. The delivery of these engines made it possible to discard many of the lighter engines and some of which were being carried as excessive equipment. The reader should bear in mind that there has been no general renumbering of locomotives since this system was inaugurated in 1902-1903. He must also bear in mind that blocks of locomotives have been transferred and assigned other numbers and individual locomotives have been renumbered in accordance to this plan to indicate the road intended to serve. This accounts for some overlapping in the following list but there were never two locomotives carrying the same number at the same time. The reader must bear in mind that no vacant numbers have been filled in the former Lines West series since 1920 and on the roads east since 1924 and that a great many of these numbers are now vacant. The assignment of these blocks of numbers, as shown on the list, is now chiefly of historical interest. By 1942, The Pennsylvania R. R. Co. had acquired ownership of the locomotives of all of the other companies except those of the P. Ft. W. & C. Ry. Co. and the Little Miami R. R. Co.

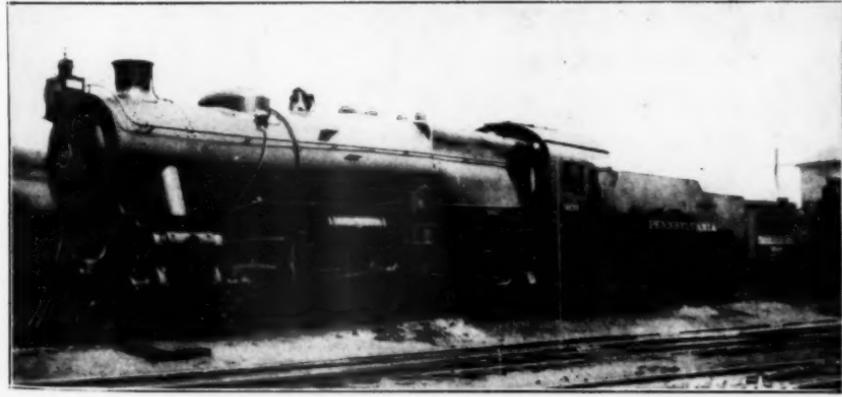
Nos. 1 to 4000 were owned by the Pennsylvania R. R. and were acquired as follows: (In 1903, 1-4000 were assigned for the P. R. R. Co.)

1- 211	Original numbers applied in 1857.
212-1406	Additions to equipment to 1890.
1407-1441	Ex Belvidere-Delaware R. R. (Numbered in the 3000 series, 1882-1890 and as such were lettered P. R. R.)
1442-1676	Additions to equipment 1890-1893. Nos. 1661-1662 came from the Cresson & Clearfield County and New York Short Route R. R., acquired in 1893. They were 4-4-0 and 2-8-0 respectively, Pittsburgh L. W.
1663-1803	Engines previous assigned to the Philadelphia & Erie R. R. and renumbered from 2001-2141 in 1898.
1804-3235	Additions to equipment 1899-1907.
3218-3319	Ex Allegheny Valley Ry. Locomotives previously numbered in the 6400's and renumbered in the P. R. R. series when that road was directly absorbed in 1910.
3320-3549	Additions to equipment 1910-1914.
3550-3578	Ex Penna. & North Western R. R. locomotives previously numbered in the 6600's and renumbered in the P. R. R. series when that road was absorbed in 1913.
3579-3655	Additions to equipment 1914-1918.
3656-3660	Ex Susquehanna, Bloomsburg & Berwick R. R. locomotives.
3661-3684	Additions to equipment 1918-1919.
3685-3699	Ex Cornwall & Lebanon R. R. locomotives.
3700-3775	Additions to equipment 1919-1920.
3776-3837	Ex Cumberland Valley R. R. locomotives.
3838-3899	Additions to equipment 1923-1924.
3900-3999	Electric locomotives acquired 1905-1941.
4000	Addition to equipment 1924.
4001-4224	Ex Northern Central Ry. locomotives. From 1897-1903 these locomotives were in the 3000 series but lettered N. C. R. With the adoption of the new system of numbering in 1903, in order to allow the P. R. R. to expand beyond 3000, 1000 more was added to the numbers of the N. C. Ry. locomotives.
4225-4699	475 2-10-0 Class I-Is, 1922-3.
4700	Class M-1, 1923, renumbered 6699.
4700-4791	Electric locomotives, Class P5 and P5a, 1932-5.
4800-4938	Electric locomotives, Class GG-1, 1934-1943.
4999	Electric locomotive, Class R-1, formerly 4899, 4800. The first GG-1 built was numbered 4899 and the first and only R-1 was built as 4800. When it was decided to build more locomotives of the GG-1 class, these two locomotives traded numbers. When the GG-1 class reached No. 4898, in order to permit them to continue without a break, R-1 4899, ex 4800, was renumbered 4999.
5001-5349	Ex Philadelphia, Baltimore & Washington R. R. locomotives.
5350-5499	Additions to equipment, 1918-1928.
5684-5697	Electric locomotives, Class B-1, 1934-5.
5698-5699	Class K-5, 1929.
5700-5749	Class G-5s, 1924-5.
5800	Electric locomotive, Class DD-2, 1938.
5907-5918	Diesel electric switchers.
5932-5937	Diesel electric switchers.
5938-5940	Electric locomotives, Class L-6 and L-6a, 1931, 1933.
6001-6085	Ex West Jersey & Seashore R. R. locomotives. In 1933, the locomotives filling these numbers as were in existence, were relettered "Pennsylvania-Reading Seashore Lines" and are no longer strictly P. R. R. locomotives.
6100	Class S-1, 1939.
6110-6111	Class T-1, 1942.

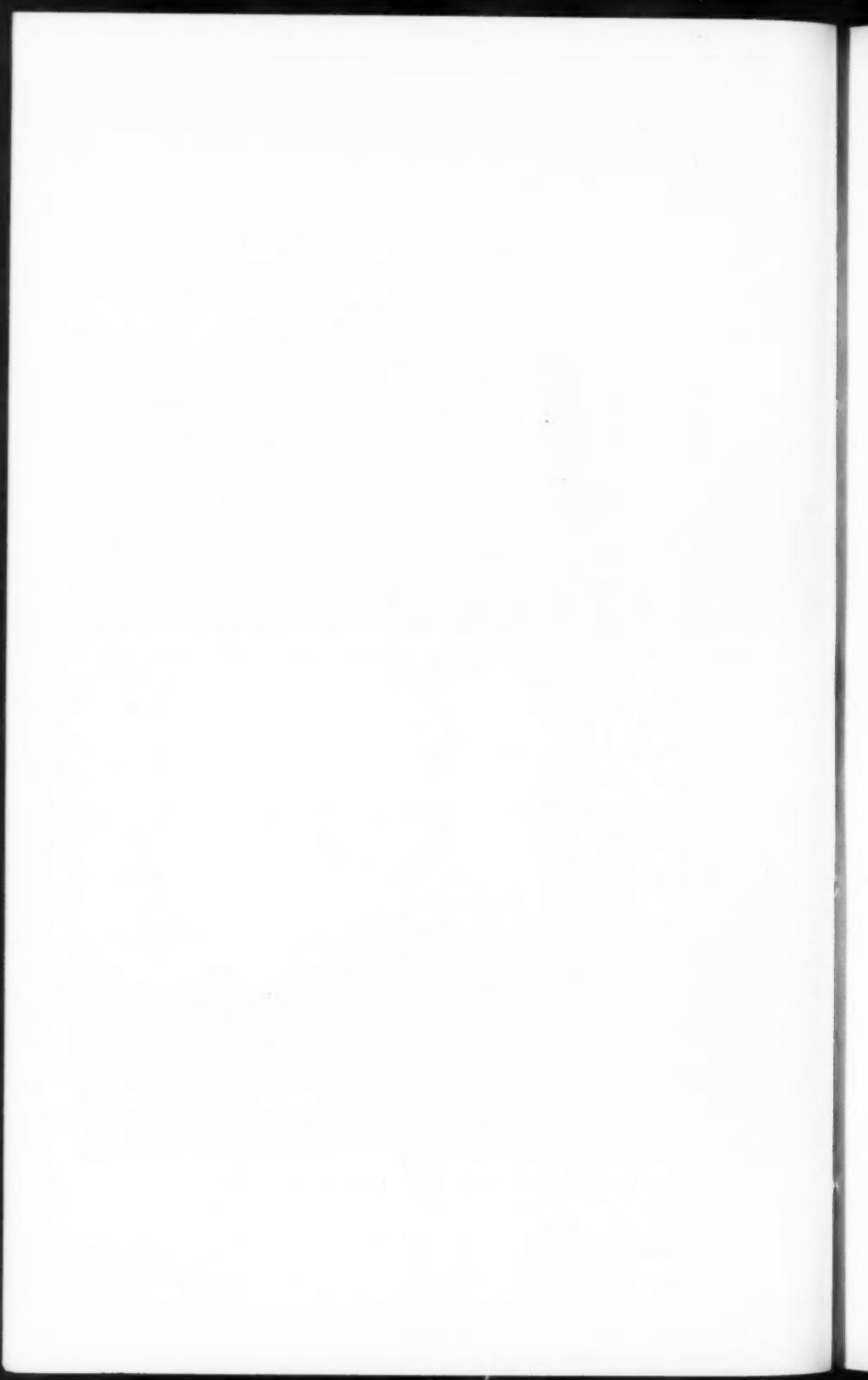
6130	Class Q-I, 1942.
6150-6167	Class J-I, 1943-1944.
6201-6340	Ex Western New York & Pennsylvania R. R. locomotives.
6341-6400	Class B-6sb, 1926.
6401-6502	Occupied by Allegheny Valley R. R. locomotives, 1903-10.
6401-6500	Class J-I and J-Ia, 1943.
6501-6543	Ex New York, Philadelphia & Norfolk R. R. locomotives.
6550-6639	Class C-1, 1925, 1927.
6601-6637	Ex Penna. & North Western R. R. locomotives, 1903-13.
6699	Class M-I, ex 4700.
6700-6799	Class M-Ia, 1930.
6800-6999	Class M-I, 1926.
7001-7575	Pittsburgh, Ft. Wayne & Chicago Ry. locomotives.
7501-7544	Formerly Pennsylvania Co., renumbered 9350-9383, 1907.
7540-7599	Ex Erie & Pittsburgh R. R. renumbered 9200-9259, 1907.
7601-7800	Ex Cleveland & Pittsburgh Ry. locomotives.
7801-7815	Electric locomotives, 1930-I, scrapped.
7850-7857	Electric locomotives, 1930-I.
7898-7899	Electric locomotives, 1930-I, since renumbered.
7801-7825	Formerly Cleveland & Marietta Ry. Renumbered 9300-9324, 1907.
7829-7899	Formerly Pittsburgh, Youngstown & Ashtabula Ry. locomotives. Renumbered 9000-9070, 1907.
7901-7961	Toledo, Walhonding Valley & Ohio Ry. locomotives up to 1911.
7901-7977	Little Miami R. R. locomotives. Originally 8901-8977, renumbered in 1917.
8001-8700	Ex Pittsburgh, Cincinnati, Chicago & St. Louis Ry. locomotives.
8701-8929	Ex Vandalia R. R. locomotives. Merged with the P. C. C. & St. L. Ry. Co., to form the P. C. C. & St. L. R. R. Co. in 1917.
8933-8950	Ex P. C. C. & St. L. R. R. locomotives after 1917.
8977-8999	Ex Terre Haute & Peoria R. R. locomotives.
8801-8823	Ex Cincinnati & Muskingum Valley Ry. locomotives up to 1911.
8901-8978	Little Miami R. R. locomotives prior to 1916. Renumbered 7901-7977 in 1917.
9000-9106	Ex Pittsburgh, Youngstown & Ashtabula R. R. locomotives.
9110-9133	Ex Cincinnati, Lebanon & Northern Ry. locomotives. Consolidated with the C. A. & Cincinnati R. R. Co., and the Toledo, Columbus & Ohio River R. R. Co., to form the Pennsylvania, Ohio & Detroit R. R. Co., in 1924.
9200-9264	Ex Erie & Pittsburgh Ry. locomotives.
9300-9325	Ex Cleveland & Marietta R. R. locomotives up to 1911.
9350-9455	Ex Pennsylvania Company locomotives.
9530-9633	Ex Grand Rapids & Indiana Ry. locomotives.
9650-9657	Ex Wheeling Terminal Ry. locomotives.
9660-9673	Ex Ohio River & Western Ry. locomotives (Narrow Gauge).
9681-9687	Ex Waynesburg & Washington R. R. locomotives (Narrow Gauge).
9700-9796	Ex Toledo, Columbus & Ohio River R. R. locomotives. (A consolidation of the T. W. V. & O. and C. & M. roads in 1911).
9812-9895	Ex Cleveland, Akron & Cincinnati Ry. locomotives. (A consolidation of the C. A. & Columbus and C. & M. V. in 1911). In 1924, the C. A. & Cincinnati R. R. Co., the Toledo, Columbus & Ohio River R. R. Co., together with the C. L. & N. Ry. Co., were consolidated to form the Pennsylvania, Ohio & Detroit R. R. Co.)
9900-9999	Ex Pennsylvania Company locomotives.
10001-10007	Ex Pennsylvania Terminal Ry. (Louisville, Ky.) These numbers were carried from about 1911-1920 and all were second-hand standard Penna. Lines engines, remaining within the Louisville Terminal limits.



P. R. R. #937. D-16b Junia 1904. The locomotive assigned to handle the special train carrying the President of the Pennsylvania R. R.



P. R. R. #3639. L-15, Baldwin 1916. Fresh from the builder.



After a locomotive was officially dropped and the number declared vacant, the locomotive was sometimes carried as excess equipment. On the P. B. & W., at one time, 500 was arbitrarily added to the former number. Thus, if you happened to see or have a print of locomotive #5719, you would know that her former number was 5219. On the Lines West, a number was added to bring the locomotive number in the 10000's. Thus, if you saw the #10530 switching in the yard at Toledo, you would know that the last three numbers were unchanged, but the former might have been 7, 8 or 9. This was succeeded by simply adding 10000 to the former number and this eliminated any possibility of duplication. On the roads east of Pittsburgh, the digit "0" preceded the number and here again, any possibility of duplication was prevented.

Ten of the class N-2 engines, I have been advised, were originally numbered in the 2000's. They were subsequently renumbered, but, so far as I know, this group carried the highest numbers assigned to any locomotives in America.

Now the writer realizes that this article will not help you identify or classify the vast number of Pennsylvania R. R. locomotives. It should however, clarify their system of numbering, a system based on assigning a certain group of numbers to the subsidiary roads, a system, which under their mechanical standards, their methods of accounting and their organization, adequately met their needs, but, with the merging of all of these lines into and with the parent system, is no longer needed. However, we hope that it has been worth recording for the benefit of our membership.

Chapter Meetings

The meetings of our chapters, like everything else, have felt the effects of this war. Some members are in the "armed forces" and others because of their war efforts have been unable to either give their time to their chapter or attend its meetings. Yet, in spite of this, our chapters have carried on and carried on well.

Denied of some of their activities by the war effort, particular stress has been laid on the meetings, to make them as interesting as possible. It may be that the number attending our meetings has been reduced for several reasons, on the other hand those that attend these meetings report an enjoyable evening by means of the entertainment and the renewing of acquaintanceship.

It was the thought of your Editor in giving this space to our chapters, to acquaint our membership at large with our chapter meetings and their speakers. For many reasons, a list of the speakers for the coming season cannot be presented but we can list the speakers of the year previous and to assure you that the coming year will be just as interesting. We can also extend a cordial invitation to anyone holding a membership in this Society to visit a chapter meeting whenever he is in that city the night of one of these meetings. Friendships are of great value and the possibility of making them at our meetings are always a source of pleasure.

From the Pacific Coast we learn that this chapter meets at 8.00 P. M. on the fourth Friday of each month in the coach "Stamford" standing in the "Engine Yard" at West Berkeley, Cal. Formal meetings have been impossible to arrange during the war and the meetings are informal in character. That they seldom break up much before midnight seems to indicate that our members find something of interest to draw them to these meetings. Mr. Stanley F. Merritt, 836 Alma Ave., Oakland, Cal., is the Chapter Secretary and is always ready to welcome any visitor or newcomer to these meetings.

Our Chicago Chapter meets on the second Friday of each month at 7.30 P. M. in Room 1200, Engineering Bldg., 205 West Wacker Dr., Chicago, Illinois. After the business meeting, three five minute talks are given; one historical, one technical and one on current events. These are followed by the speaker of the evening. Last year our Chicago Chapter offered the following interesting program:

September—Movies, one on the Illinois Central R. R. and one on Mexico.

October—"Financing Super-Railroads" by John W. Barriger, III. This paper was reproduced in our Bulletin No. 64.

December—Exhibition of pictures taken by members of the Society, together with the Annual election and business meeting.

January—"Pullman's Contribution to the War Effort," by George A. Kelly, Vice President, Pullman Company. Part of the talk being about troop sleepers and the possibilities for post-war travel.

February—Movie on the Poppet Valve supplied by the Franklin Ry. Supply Co.

March—Movies made by a member of the local chapter and a picture furnished by the Denver & Rio Grande Western Ry.

April—Open discussion meeting led by Prof. Shouley of Northwestern University on "Why is a Railroad Fan?"

May—"Railroads in War Time," by E. M. Claypool of the Illinois Central R. R., with particular emphasis on what the I. C. is doing in 1944.

June—Movies—"The Steam Locomotive" and "Freight Yard"—both films produced by the New York Central Railroad.

Surely the Entertainment Committee deserves much credit in arranging such a variety of subjects for our members and we hope our members in the vicinity will avail themselves of this opportunity. Miss Verna Larsen, 209 South La Salle St., Chicago, Illinois is the Chapter Secretary.

Our New York Chapter meets on the third Friday of each month at 7.30 P. M. in Room 1101 of the Engineering Societies' Bldg., 29 West 39th Street, New York, N. Y.

Here again our members have been treated to an interesting variety of subjects including some "home talent."

October—"Thirty Years of Locomotive and Railroad Photography" by Robert C. Schmid, one of our own Directors.

November—"G-Men of the Rails"—Lecture by Clyde Stephenson and motion pictures presented under the auspices of the Sperry Rail Car Co.

December—Maurice K. Dugan, Special Representative of Trustees, N. Y. N. H. & H. R. R.—"How the New Haven views Public Relations." Mr. Dugan holds a membership in this Society.

January—"The Railroads and the War"—a paper given by Mr. J. Frank Waddell, Office Assistant to Executive Vice President, New York Central System.

February—"Book-Author Night"—Edward Hungerford, Prof. T. W. Van Metre, S. Kip Farrington, Robert Selph Henry and Joseph Bromley participated, three authors being members.

March—"British Railways under Bombing Conditions"—a paper read by Mr. Thomas D. Slattery, Traffic Manager, Associated British Railways.

April—"An Engineer Looks at the Future of the Railroads"—remarks by Robert "Bob" Butterfield, Retired Locomotive Engineer (The Century), New York Central System.

May—"National Officers Night"—"Some Railroad Landmarks of New York City," presented by your Secretary, Warren Jacobs and reproduced herein—Some Notes on the train operation on the Boston & Worcester R. R., by your President, Chas. E. Fisher and Miss Dorothy Barek, Librarian, New York Historical Society as guest.

June—Luncheon at American Museum of Natural History and

afternoon visit to Museum of the New York Historical Society as guests of Mr. Shelley and Miss Bareck. Mr. E. Colgan, 85-31 Britton Ave., Elmhurst, L. I., N. Y., is the Chapter Secretary.

This fall started with a paper on the Ten-Wheel Type of Locomotive by Paul T. Warner, one of our members and Mr. C. Vernon Thomas of the Baltimore & Ohio R. R. was scheduled to speak for November.

Railroading, whether today or yesterday is so diversified as to render the subject almost endless. Some of its sides make a stronger appeal than others but the appeal is there, none the less. Our chapters try to present a diverse program for the year and it is our hope that they will make an appeal to our membership. If you live in or near any of the cities where we have a chapter and you are interested in their program—come in and get acquainted.

New Books

THE EARLY HISTORY OF TRANSPORTATION IN OREGON, by Henry Villard, edited by Oswald Garrison Villard, 99 pages, 10x6 $\frac{3}{4}$, paper bound, \$1.00, cloth bound \$2.00. Published by the University of Oregon, Eugene, Oregon, as Studies in History No. 1.

This is a history that concerns chiefly the troubles and vicissitudes of the Oregon & California R. R. Co., and the part the author played in its management. If the actions and methods employed by a certain Ben Holladay were of a questionable nature, his temporary success was due to the length of time it took to obtain information as to what was going on in Oregon.

The book is divided into seven chapters. The first covers transportation in Oregon prior to 1869. This is followed by the appearance of Ben Holladay, Henry Villard, the elimination of Holladay, the troubles of steamship operation and the completion of the Northern Pacific R. R. Co.

Between the years 1874 and 1884 Henry Villard was a frequent visitor to Oregon. Assuming the leadership in 1887 he again became a frequent visitor until his retirement in 1893. Villard was educated for a professional career in Germany but he came to this country in 1853, lived with some relatives at Belleville, Illinois, studied law in Carlisle, Illinois in the offices of Senator Lyman Trumbull of Belleville and of Julius Manning of Peoria. He reported the Lincoln-Douglas debates for the New York Tribune and was a war correspondent during our Civil War. He became interested in public, corporate and private finance and was an early advocate of the so-called mortgage banks, common in Europe but unknown here. Failing health caused him to return to Germany in 1871 and two years later, failure on the part of the Oregon & California R. R. to pay the interest on their indebtedness, Villard was appointed by the German bondholders to return to the United States, examine conditions and to report. His findings and his future actions are the story of this book—one of the most curious episodes of all of the railroad annals in this country. The book is very carefully documented for facts, dates and figures and it is a most important addition to the history of our railroads in the north-west, a subject on which too little has appeared.

P. R. R. CLASSIFICATION SERIES NO. 4

Those of our members who are interested in the motive power of the Pennsylvania R. R., will be interested to learn of the publication of the fourth of this series by our member, Mr. Norman J. Perrin. His latest publication covers the light Atlantic types, Classes E-1-5 and E-7, on that system. This publication is more complete, both as to detail and history of this type than any of his previous publications. In addition to the development of this type, the author has listed the various classes

in the order of their appearance, together with their shop numbers, re-numbering and date of disposition, both for the P. R. R. and Lines West Containing 56 pages, together with several illustrations, the publication is of great value to any student of P. R. R. motive power. The price is 75c per copy and orders for same should be placed directly with the author—Mr. Norman J. Perrin, 4523 Arabia Ave., Baltimore (14), Maryland.

Worth Reading

(Compiled by ELIZABETH O. CULLEN, *Reference Librarian*,
Bureau of Railway Economics, Association of American Railroads,
Washington, D. C.)

BOOKS AND PAMPHLETS

Army Transportation Corps Observers Second Anniversary. Press release "For release July 30 and thereafter" by Bureau of Public Relations, War Department, Washington 25, D. C. 5 mimeo. 1. "More than 4 million troops, and over 63 million ship tons of supplies were transferred from the United States to 127 overseas ports throughout the world in the 31-month period from December 1941 through June 1944. . ." (p. 1)

" . . . Yank 'Cheminots' operate military railroads on five continents. . ." (p. 3).

Abstract in *Railway age*, v. 117: 207-208; July 29, 1944.

British Railways in Peace and War, by British Railways Press Office, Waterloo Station, London, S. E. 1, England. 1 shilling. 72 pp. Illustrated.

"This booklet is designed to give to the public a brief account of the work of the British railways in the fifth year of the war. But, the war apart, 1944 is an important year in railway history, for it marks the coming of age of the four main line railway companies. . . (p. 3). "Post War Service" pp. 66-69.

The Early History of Transportation in Oregon, by Henry Villard. Edited by Oswald Garrison Villard v, 99 pp. Published by University of Oregon, Eugene, Oregon, as Studies in History No. 1 \$1.00, paper binding; \$2.00 cloth.

"By way of introduction and for the better understanding of what follows, it is proper to precede the account of my own activity by a review of the evolution of railroad and navigation interests in Oregon up to 1874. The first chapter in this retrospect embraces the genesis of the Oregon & California Railroad Company, a more curious episode than which will not be found in the railroad annals of the United States. . ." (p. 1).

50 Years of Transportation—1894-1944—St. Louis Union Station and St. Louis, by Terminal Railroad Association of St. Louis, Union Station, St. Louis, Mo. cover-title, 32 pp. incl. maps and illustrations, partly in color. End-papers: Union Station and Tracks. Issued in connection with the celebration of its anniversary on September 1, 1944, ". . . to present an historically accurate document which seeks to show how the spanning of the Mississippi River by the Eads Bridge and the subsequent construction of Union Station resulted in the establishment of St. Louis as the hub of this country's railroad network. . ."

Y **Food in War and Peace**, by Karl B. Mickey. 47 pp. Published by International Harvester Co., Chicago 1, Ill. ". . . The inventions which revolutionized agriculture, however, all originated in North America. The reaper was invented in 1831, . . . Within one decade the time required to harvest an acre of wheat was reduced from an estimated 37 hours to 11½ hours.

These inventions of horse-drawn farm machinery, making possible the cultivation of greater acreage and fostering the rapid extension of agriculture westward, would not have been possible without the development of the steam railroads. And the extension of the railroads, in turn, would not have been possible without the development of the west by farm machinery. . ." (p. 27).

G Four Words That Changed the World—What Hath God Wrought? —Centennial of the Telegraph, May 24, 1944, sponsored by The Western Union Telegraph Co., American Telephone and Telegraph Co., All America Cables and Radio, Inc., The Commercial Cable Co., Mackay Radio and Telegraph Co., RCA Communications, Inc., Press Wireless, Inc., Tropical Radio Telegraph Co., and Association of American Railroads. [14] pp. Illustrated. Available on request to The Western Union Telegraph Co., Attn. T. B. Gittings, 704 14th St., N. W., Washington 5, D. C. "Growth of the Telegraph Industry" pp. [6-12]. "The Telegraph Tomorrow" p. [13].

The Freight Traffic Red Book—1944, compiled and edited by Charles J. Fagg, Walter M. Weller and Arthur B. Strunk. 1464 pp. Map of Railroad Freight Classification Territories and Freight Association Rate Territories. Published by Traffic Publishing Co., Inc., 100 Sixth Avenue, New York 13, N. Y. \$10.00. "Explanation of Abbreviations" pp. 5-10, includes "Abbreviations used by rail carriers in the United Kingdom" p. 10. "Traffic Glossary" pp. 11-26. "Rate Factors" pp. 27-36. "Freight Classifications" pp. 37-48. "Rate Territories" pp. 49-51 and the Map.

G General Motors Diesels in Review, 1934-1944—10th Anniversary of Diesel Road Power on American Railroads, by General Motors Corporation, Electro-Motive Division, La Grange, Ill. [24]pp. Illustrated, partly in color. Includes: Map: Routes of Diesel-powered freight and passenger trains.

The Geography of World Air Transport, by J. Parker Van Zandt. Vol. 1 in series, *America Faces the Air Age*, published by The Brookings Institution, Washington 6, D. C. 67 pp. End-paper maps. \$1.00 Preface, by Harold G. Moulton, states, p. iii: ". . . Under the general title 'America Faces the Air Age,' a series of small volumes, bearing particularly on aspects of international air transport, are planned for publication during the coming months.

These studies are under the direction of Dr. J. Parker Van Zandt, Pioneer airline economist and executive, and aviator in the first World War. . . now a regular member of the Institution's staff. . ."

Lionel Wonder Book of Railroading, by the Lionel Corporation, 15 E. 26th Street, New York 10, N. Y. [50] pp. Colored illustrations. "Will Trains of the Future Look Like This?" [pp. 1-3], includes: ". . . The train of the future will look like nothing you ever heard of: . . . some leisurely speed of, say 300 to 450 miles per hour. . .

The train will ride on only one track.

Propulsion will be, of course, by *rocket*. Coal, at the best, is an expensive way of getting energy. Decreasing oil supplies may make, in the future, the Diesel engine too expensive. . ."

The Permanent Way Institution—Diamond Jubilee Souvenir—July 1944. 76 pp. Illustrated. Published by the Institution, London, England. Contains: "British Permanent Way Development, 1844-1884-1944," by C. E. R. Sherrington, pp. 9-16; "The Permanent Way Institution" by H. James, pp. 4-7. Reprinted in part in Railway Gazette [Ed.]: Permanent Way Institution Diamond Jubilee, in issue of June 30, 1944, pp. 660-661.

"The Permanent Way Man's Job in India," by H. C. Muggeridge, pp. 48-56. Illus. "Recent Innovations in Track Maintenance and Design" by W. K. Wallace, pp. 28-34. "A Review of Signalling Progress" by F. Horler, pp. 65-69.

"Wartime Emergency Repair" by Charles E. Lee, pp. 70-76. Illustrated. Abstract in Railway Gazette, July 14, 1944, pp. 38-39, with Editorial note, p. 30, mentions: ". . . Some details, previously unpublished, of wartime emergency repair preparations of the railways have now been released in the form of a Paper to the Permanent Way Institution. . ."

"Welding as Applied to Modern Railway Permanent Way Practice" by P. Croom-Johnson, pp. 41-47. Illustrated.

Railroad Map of the United States—Issue of January 1944, prepared under the direction of Chief of Engineers, United States Army—Revised by Rail Division, Office of the Chief of Transportation. 4 sheets, which, when mounted, make a map approximately 7 feet by 4 feet. Scale: 1/2,500,000. For sale by 1) Chief of Engineers, U. S. Army; 2) Army Map Service, Washington 25, D. C. 60 cents for the 4 sheets. Cash remittances preferred. Make check payable to The Treasurer of the United States.

Railroads at Work—A Picture Book of the American Railroads in Action. 68 pp. Illustrated. Map, pp. 32-33, with note: "The United States and its neighbors, Canada and Mexico, embrace about three-eighths of all the railway mileage of the world." Available on request to the Association of American Railroads, Transportation Building, Washington 6, D. C.

Railroads In This Century—A Summary of the Facts and Figures with Charts, prepared for the Railroad Committee for the Study of Transportation, Association of American Railroads, Washington 6, D. C. [4], 24 pp. Editorial comment, with abstracts, in Railway Age, August 26, 1944, pp. 327-328.

Railroads in Two Wars—1916-1917-1918; 1940-1941-1942, by Association of American Railroads. 40 pp. incl. Illustrations, Graphs, Tables. Available on request to the Association, Transportation Building, Washington 25, D. C. ". . . A few of the many changes and contrasts between railroading today and railroading in the period of the First World War are here shown in graphic form. . ."

The Steam Locomotive—Its Theory, Operation and Economics, including Comparisons with Diesel-Electric Locomotives—Second Edition, Revised and Enlarged, by Ralph P. Johnson, ix, 564 pp. Tables. Published by Simmons-Boardman Publishing Corporation, New York 7, N. Y. \$5.00.

". . . This second edition . . . includes three new chapters, discussing respectively Steam Utilization, Distribution of Locomotive Weight, and Braking. . .

The first edition was exhausted in a year, and this edition is now offered to meet a continuing demand." Foreword to 2d edition, p. vi.

Trains, Tracks and Travel—6th Edition, 1944, by T. W. Van Metre. v, 417 pp. Illustrated. Published by Simmons-Boardman Publishing Corporation, New York 7, N. Y. \$3.50. ". . . Just now we are learning more certainly and more clearly than ever before how much our railroads mean to us, how dependent we are upon them for the continuous operation of our industries, how necessary they are to us the preservation of our safety as a nation. For we are at war. . ." (p. 12) "How Our Railroads Went to War," Chapter XII, pp. 397-414.

ARTICLES IN PERIODICALS

Baltimore and Ohio Railroad Company Library, by Margaret Talbott Stevens. Paper presented before Transportation Group, Special Libraries Association, Philadelphia, Penna., June 20, 1944. Special Libraries, July-August 1944, pp. 299-304. ". . . Last year a fine collection of railroad volumes from the library of the late Daniel Willard was presented to President R. B. White for such use as he saw fit. Recognizing their value, Mr. White visualized in these books the nucleus for the development of a scientific research library. On January 1, 1944, the Baltimore and Ohio Research Library was established. . ." (p. 299) Abstract in Railway Age, July 29, 1944, pp. 203-204, under title: B. & O. Establishes Research Library.

Decade of Streamliners. Railway Age, April 22, 1944. Includes: "Decade of the Streamliners—In ten years, these new trains have changed the nation's travel habits" pp. 762-769, which contains "The record of the individual railways [30 of them]. . . depicts a revolution in railway passenger business. It also affords a basis of prophecy as to better things to come. . .

"Development in Car Equipment for Streamline Trains—first decade shows use of new materials and spectacular innovations in the design of modern light-weight cars which have captured the public fancy." pp. 770-775. Illustrated.

"What the Streamliners Have Done for Passenger Motive Power—Importance of high horsepower-weight ratio demonstrated—Unit capacity of Diesels rapidly increased—Utilization of steam power accelerated. Illustrated.

50-Year-Old Station Made Modern. Railway Age, August 26, 1944, pp. 330-333. Illustrated. "Complete modernization of the public facilities in the 50-year-old Union Station at St. Louis, Mo., has so altered and improved its appearance, increased its capacity and added to the comfort of patrons that it is difficult to realize that this structure is not newly designed but, actually, was built 50 years ago . . ." (p. 330). Footnote on same page, noted: "September 1 marks the fiftieth anniversary of the opening of the Union Station at St. Louis, Mo., which will be celebrated with appropriate ceremonies on that date."

"It Will Be a Workaday Golden Jubilee so 100,000 Guests Won't Count Next Friday at Union Station's 50th Birthday Party" according to Harry R. Burke, in St. Louis Globe-Democrat, August 27, 1944, p. 5E

Freight Progress Annual [1944]. Railway Age, May 20, 1944. Includes: "Man power . . ." pp. 937-945. "Women . . ." pp. 938, 943. "All Records Broken Again" pp. 946-949.

"Pointing Way to Future Progress—That is the job of the Railroad Committee for the Study of Transportation . . ." p. 950.

"Railways Meet All Demands for Military Traffic" pp. 952-954.

"Individual Railways Set Records—Reach new highs in operating efficiency and volume of traffic handled" pp. 959-966. 61 railroads' records given.

"What of the Future—Competition—Equipment—Rates—Postwar Service—Merchandising the Service? Plans of executives for postwar freight service reveal many innovations to meet needs of shippers, pp. 970-979.

"The Railroads' Pages"—advertising pp. 185-196. "On the following pages . . . appear the messages of the nation's railroads, telling the story of their individual services, how they are meeting the tremendous demands for transportation and what they are planning for post-war."

Material Aid to Russia, by Truman E. Hienton, Lt. Col., Ordnance. The Military Engineer, July 1944, pp. 213-216. ". . . geography and climate are two very important factors affecting operations in Iran . . ." (p. 213). "Highway Construction" pp. 213-215; "Port Facilities" and "Assembly Plants" p. 215; "Railroad Operation . . . on one of the world's most difficult railroads" pp. 215-216; "Motor Transport" p. 216. Illustrated.

The "Mosquito": Its Impact on Railway Policy. Monthly Bulletin, Railway Research Service, London, England, August 1944, pp. 106-108. "When the full story of the war can be unfolded, there will be one feature which future generations will probably regard as one of the land-

marks of the war period, namely, the development, for operational work, of the *Mosquito* type of aircraft . . .

It may well be asked what connection the *Mosquito* design bears to railway policy in the past and the future. In fact, the connection is a close one because, . . ." (p. 106). Note: The London, England Times, July 6, 1944, p. 2, contained: *Kiel Canal Mined—Daring Operation by Mosquitoes—Shipping Delayed for Ten Days.* "About a month before the landings in Normandy . . . in bright moonlight . . . It is estimated that at a critical time when it was important to block every possible route for German supplies, 1,000,000 metric tons of cargo were held up . . . by a single Mosquito squadron. . ."

Post-War Problems—Locomotives and Cars, by K. F. Nystrom. New England Railroad Club. Proceedings, April 11, 1944, pp. 62-70. Questions and Answers, pp. 70-83.

Railroad Transport—War and Postwar, by J. V. B. Duer. Paper presented before Transportation Group, Special Libraries Association, Philadelphia, Penna., June 20, 1944. Special Libraries, July-August 1944, pp. 293-294.

"In the summer of 1942, the Association of American Railroads authorized the formation of a Railroad Committee for the Study of Transportation under the direction of Judge R. V. Fletcher, Vice-President of the Association, for the purpose of compiling and presenting to the Association the information necessary to enable the railroads of the country to adequately meet the transportation conditions which might be expected to exist in the postwar period. Accordingly, Judge Fletcher selected a group of fifty railroad officers whose duties covered all phases of railroad activity and asked them to meet him in Chicago to assist in forming the Committee and starting the work. . . (p. 293)

. . . Notable among the reports already presented and accepted are those on air transport, post-war fiscal policy and public relations. . .

. . . When the work is completed, which should be in the early part of 1945, the Association of American Railroads should have at its disposal an up-to-date and accurate picture of the economic condition which may be expected to exist in the country when the war is over, as well as the volume of freight and passenger traffic, and the steps necessary for the railroads to secure their portion of the transportation business of the country." (p. 294).

Railroading under the Spur of War, by A. L. Sorensen. New York Railroad Club. Official Proceedings, April 20, 1944, pp. 119-127. ". . . Although this discussion concerns itself only with railroads, the Office of Defense Transportation's authority, as I have indicated, covers all forms of transportation; and under pressure of war conditions, the country is today nearer to a fully utilized transportation system than ever before. Let us look at the record . . ."

Railroads of the Americas Do War Duty, by Robert J. DeCamp. Foreign Commerce Weekly, U. S. Department of Commerce, July 15,

1944, front cover and pp. 5-7, 34, 36-39. Map: *Railroads of Latin America*, p. 7. Illustrations include front cover: Firewood for locomotives.

Railway Passenger Cars, by Edward G. Budd. Railway Club of Pittsburgh. Official Proceedings, June 1944 (containing proceedings of meeting of May 25, 1944), pp. 100-108. ". . . A railroad president, Mr. Alex J. Cassatt of the Pennsylvania Railroad, said that no wood cars should run through the tunnel he was building into New York City . . ." (p. 100)

The car builders as a whole denounced the idea that railway cars should be made of steel and refused to have anything to do with it . . .

. . . The burden of the design of the steel car fell into the hands of Mr. Kiesel [Chief Engineer of the PRR], a very able man and very fine character . . . (p. 101)

In our work on the streamline train we too had to go step by step . . ." (p. 103)

Tomorrow's Locomotives, by J. E. Davenport. The Western Railway Club. Official Proceedings—Locomotive Night—April 17, 1944, pp. 14-27. Discussions by A. J. Townsend, and R. P. Johnson, pp. 27-30.

Trans-Iran Transportation Routes. Map, showing railroads, broad-, standard- and narrow-gauge; roads, paved, unpaved, and unimproved; "Important Tracks"; Telegraph, and Water-holes in the desert.

Transport by Rail. I-II, by C. E. R. Sherrington. Art & Industry, London, England, July 1944, pp. 2-9; August 1944, pp. 34-40. Illustrated.

". . . The post-war period will call for extensive reconstruction of facilities, . . .

. . . it is desirable to analyse the fundamental considerations which must form the basis on which to build anew or reconstruct, and they are complex . . . (p. 2).

The first part of this article dealt with the question of stations, the difference between home and foreign conditions, station design and problems arising from new materials such as plastics. This second part covers the question of method of entry into cities, the freight aspect of a railway's function to the community and the form of advertising. . ." (p. 41)

Transport Services and the War. A weekly feature of *Railway Gazette*, London, England. Numbered. No. 250, in *Railway Gazette*, July 14, 1944, pp. 45-46, included: The Flying Bomb—Voluntary Evacuation—Deep Level Tube Tunnel Shelters—Insignia of the U. S. A. Army Transportation Corps, and its constituent symbols. Illustrations, pp. 40-42, of the shelters, have caption: NOW: Deep-Level Shelters. POST-War: Perhaps an Express Tube Railway. Editorial comment, p. 29.

Transportation—Today and Tomorrow, by Fred G. Gurley. Pacific Railway Club. Proceedings, January 1944—containing proceedings of

annual meeting, March 28, 1944, pp. 6-11. ". . . of course we must continue to make technological improvements. One of the things I commend to you is a greater appreciation of the advantages produced by reducing to a minimum the needless weight transported upon the railroad. . ." (p. 7).

The World's Hardest Lorry Run, by I. P. Tooley, Lt. Col., British Army. The Military Engineer, July 1944, pp. 217-218. Illustrated. Between Andimeshk and Tabriz, Iran, 730 miles, from November 1942 when "the Germans were driving down from Rostov toward Baku (see Frontispiece) . . ." until March 1943, "With the Americans taking over the Iranian Railways and beginning to operate their Motor Transport Service. . ." After March 1943, between Khanagin and Tabriz, 680 miles. ". . . There is nothing dull and uneventful about life in Paiforce for the men of the 'Aid to Russia' Transport Column. . ."

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Bulletin #63 was devoted exclusively to the History of and a list of the Locomotives of the Missouri-Kansas-Texas Lines.

In Memory Of

E. L. BANGS

Annual Member

3110 Windsor Ave., Baltimore, Maryland
who died on August 11, 1944.

A. C. EASTMAN

Annual Member

West Lebanon, New Hampshire
who died on July 13, 1944.

E. ANDRE SCHEFER

Life Member

8 Rue de la Petite Arche, Paris (16), France
who died on March 15, 1942.

F. E. WILLIAMSON

Annual Member

President New York Central System
230 Park Ave., New York, N. Y.
who died on September 29, 1944.

